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Greek Houses, and Those who lived in them.

IN the article on Homer's description of the palace of Ulysses it was incidentally remarked that the structure in general distribution had considerable resemblance to the Greek house of historic times. It is as well to be a little more explicit on the limitations under which this can be accepted, for the authorities as to the later Greek house are either scanty or perplexed. Of one general and very important point of resemblance there is no uncertainty, that is, the division of the dwelling into a strictly secluded set of apartments appropriated to the women and the privacy of family life, and another portion comparatively public, where the intercourse of men with men, either for sociability or business, was openly carried on. We may be assured that this rule was adhered to with particular cautiousness at Athens, where the life of woman was one of peculiarly close retirement. The same absence of external windows or openings for light might be assumed, apart from other evidence, from the habits of the Greek burglar, whose name is evidence that he did his "burglaring" chiefly by undermining or digging through walls, having little opportunity to avail himself of the help of faulty or neglected fastenings. Greek houses, like those of any other nation advanced in civilisation, were, of course, very different, and at different times, in extent and in degrees of dignity. Demosthenes could point to the still well-known houses of Themistocles and Miltiades as models of simplicity, while in his own time the expense which was lavished on private dwellings put public monuments to shame. That the houses built in streets of fortified towns, where space was always important, were constructed with walls in common,—not party-walls,—follows, of course; and that with one open market-place, streets and alleys were very narrow,—witness Mediæval Florence and Roman London. But still it is interesting to read in Thucydides how the Plataeans broke in hot haste communications through walls of adjacent houses, and so mustered a force in a position to drive a body of intrusive enemies into panic-stricken flight from the Agora, to be hunted down through lanes in all directions. The same causes led to the usual encroachments and their correction. As early as the days of the tyranny of the sons of Pisistratus, a check was placed at Athens upon the projection of upper stories over the streets, the occupation of public pathway by steps, undue extension of front railings, and the system of making street-doors open outwards. In the country no such interference was required, and it was here that the wealthy indulged at once in a national passion for the country, and every variety of taste in the lavish decoration of their mansions.

The arrangements of the house and household of an Athenian citizen of very moderate means are given to us in a speech of Lysias, which has always been celebrated as a model of lucid and effective narrative of circumstances. It was written for Euphiletus in justification of his killing an adulterer whom he surprised within his walls. The defendant has occasion to lay stress on the narrowness of his means as proving his superiority to sordid motives in the vengeance which he took in preference to accepting compensating ransom; he speaks of his house as a small one, and he had but one young female servant, apparently a slave, to go to market and to attend on himself with his wife and infant.

His dwelling, he says, consists of two floors of equal extent, above and below,—*gynæconitis* and *andronitis*, that is, as distributed into female and male divisions. Small as the house might be therefore, there was at least the same understood separation which was much more of a reality in larger establishments; just as our builders are called on now to provide nominal kitchen, dining-room, and drawing-room in small houses where the occupants disregard by choice or perforce all such nicetics of appropriation. In the house of Euphiletus the stairs were as steep as they must be in cramped space, so much so that to avoid peril to the wife in going down stairs with the infant when it was to be washed—high service was not—the husband changed the usual arrangement, and put the women on the ground-floor; he himself not only sleeping above, but having his ordinary living-room there, so when he brought home a friend whom he casually met belated, it was there that they dined. On another occasion when he returned unexpectedly from the country, he took dinner in the upper chamber with his wife; afterwards she went down, professedly with reluctance, to attend to the infant that the servant, her accomplice, had caused to cry, and after some banter of pretended jealousy shut the door upon him and locked him in. In the course of the night while alone, he hears both the doors go, the *aulcios* and the *metaulos*, but his curiosity for the cause was parried by a tale that the lamp kept by the infant had gone out and had to be re-lighted from a neighbour's. In this small dwelling the dignified titles for the doors signify no more than the house-door and the room-door; the door of the hall and the door beyond the hall or entrance passage. On a later occasion, Euphiletus has warning from the servant-girl of the injury done him; by threats of hard labour and torture which he was competent to inflict on his own responsibility, he had frightened her into confirming information received from a slighted paramour of the seducer. He is able to descend and quit the house without passing through rooms on the ground-floor, and carries out his purpose; in fact, he brings in a number of friends to bear witness to his act and its provocation, as well as for aid in case his injurer is armed, bursts in the door, first binds Eratosthenes hand and foot, and then, rejecting all supplications and offers of money, kills him on the spot, as by the Athenian laws he was in such case held harmless in doing.

In another speech of Lysias (adv. Simon., 96), the scene of an offence complained of was a house large enough for the usual female apartments to be on the ground-floor. The notice illustrates the strictness with which the separation was sometimes if not ordinarily preserved; the words are,—"he came to my house at night intoxicated, and, forcing the doors, made entrance into the women's apartment, among my sister and nieces, orphan girls who have led such well-ordered lives as to be abashed at being seen even by members of the family."

Another act of violence which came before the courts introduces us to a domestic scene in the country-house of an Athenian of sufficient property to be liable to the onerous charge of a trierarchy. We are not concerned with the general merits of the quarrel or validity of counter claims. Upon whatever pretence, Euergus and Mnesibulus broke down the door of his house that communicated with the garden, and came upon his wife and children as they were at a meal in the *aule*, which here is evidently a proper court. An old nurse of the owner was with them at table; she had received her freedom from his father and afterwards married; but being left a widow and unprovided for, was taken back into the family from respect and gratitude, and also as a useful help to the wife in keeping house during the absence of the master on public duties. The old lady certainly gave proof that she merited most loyally the confidence placed in her, and to be spoken of as attached and faithful. The rest of the female servants were in a tower (*purgos*) which they ordinarily occupied, and when they heard the noise of the intruders, fastened themselves in and escaped molestation. The intruders, in fact, were seizing all they could lay their hands on in the house, after having already carried off a flock of sheep in the field, with the shepherd and a boy in charge of a copper vessel of considerable value. The wife protested with spirit, but in vain, that some of the objects seized were her separate property—part of her dowry. The old nurse, seeing how things went, caught up the vessel (*cymbium*) from which she was drinking and put it in the fold of her upper dress; the material is not mentioned, but it seems to have been of value by the fight that was made for it; she did not loose her hold till she had been beaten, half throttled, her arms and hands

twisted back, and she was so much injured as to need a doctor afterwards. The tower also was plundered of its contents the next day; by its name and the resistance which it offered at first, it reminds the writer of the ancient tower, — round in this instance, — which remains attached to the rebuilt farm of Godlingstone, near Swanage; by the thickness of its walls, and other indications, this has the appearance of having been provided as a place of refuge in case of danger of surprise by marauders from the adjacent coast.

Another informant of peculiar intelligence is Xenophon. Xenophon is never so much in his element as when he is insisting on the value of intelligent organisation; whether he is arguing for the existence of a Divine Providence from the bodily and mental constitution of men,—from the scheme of dentition by which incisor teeth are placed conveniently in front and the molar behind at the sides, or from the distribution of instincts between man and woman, by which one sex is as well fitted for the care of the young and supervision of the home as the other for procuring its comforts through exposure, labour, and conflict of all kinds out of doors; whether he is illustrating, by theory or record of his own practice and experience, that great principle of the art of war,—the combined employment of all arms for mutual support under variable circumstances, or reporting the maxims of domestic and economical management as accepted by a shrewd agricultural speculator. In the introductory chapter of his "Œconomics" he introduces Socrates as leading up to a primary definition in his favourite way, by citing the contrast, admitted at once to be familiar, between some men who built houses at enormous expense to find themselves most inconveniently lodged after all, and others who at comparatively small outlay provided themselves with dwellings which gave them everything that could be desired. The model economist, Ischomachus, is afterwards quoted as in possession of a house of which the best bedroom supplies a secure place for the most important valuables, while appropriate storage is provided in a cool place for the wine, and in dry places for the corn and like produce of the farm; these are included in the female division of the house, which is capable of being shut off from that of the men, more promiscuously frequented, as well for the prevention of pilfering as to keep the numerous male and female slaves effectually apart. The house was built with the principal frontage to the south, and the living-rooms were so arranged as to have full advantage of the winter's sun, while escaping the severest heats in summer. This was effected, as Xenophon tells us elsewhere, by the particular degree of projection given to the protecting porticos. The problem may be stated thus. In the latitude of Athens the noonday sun at Midsummer has an altitude of 70 degrees, and at the equinox, of 50; let it be required to give such projection to a screen from the vertical wall that a given breadth on the ground in front will always be in shade at midday in the interval between the vernal and autumnal equinox. A right angle to scale represents the vertical wall and ground line in section; from the point marking the extent of breadth of the latter required to be protected, draw a line at an angle of 50 degrees inclined outwards, then a straight line meeting any point in this from any point on the wall line, will give the projection to scale of the screen required from that point. The problem is scarcely more complicated for other aspects and other hours and seasons. The matter might be worth consideration when windows are about to be protected at random by such verandahs as the dealer happens to keep in stock.

Ischomachus impresses on his wife the value of order from the example of a model of naval architecture,—a large Phœnician merchantship, encumbered as it was necessarily with sails, oars, and ropes, with provision of abundance of weapons and other armament for protection against pirates, and the utensils for a numerous crew; and though thus the space vacant for merchandise was not larger than a dining-room for ten guests, it was, nevertheless, thanks to system, sufficient for storage of a great variety of goods, all within easy reach, and ready for instant delivery, as required. This lesson is part of a course of instruction to his wife which Ischomachus very amusingly details. She might well be thankful for some help, considering the full scope of the duties he expected from a girl whom he says he married in her fifteenth year, and who had been so carefully tended and brought up on the Athenian system as to have previously been allowed to see and hear and make inquiry about as little as possible. What experience she did bring was in looking after maids engaged in spinning wool, in cutting out a garment, and, what our agriculturist expresses high appreciation of, a knowledge of cookery. He comes in at last for a touch of that irony from which few of those who talked with Socrates got off scot free. He vaunts in lofty terms the distinction of his father above all the Athenians for the love of agriculture, which he himself has inherited. Socrates gently brings him into the position of having to admit that this love is much the same that a merchant has for a cargo of corn; it is at last a love for the money it brings. "You are sportive, Socrates," is the reply; "but this, I conceive, is no more than is the case with those who are said to be fond of architecture,—who are used to sell houses as soon as they have completed them, and begin at once to build others." "Yes, by Jove, Ischomachus! and I dare swear that I have full confidence in your naturally conceiving that all men love whatsoever they conceive they will make a profit by."

In the pseudo-Aristotelian "Œconomics" the rule is stated that a house should be airy or well ventilated in summer and sunny in winter, and, therefore, protected from the north,—that is, of southern aspect,—and it is to be not of equal breadth (*isoplates*); which seems to mean, not forming an equal-sided block as unfavourable to circulation of air. So, it is said, both daily comfort and health will be best consulted.

Not much more is to be obtained from the Greeks at first hand respecting their houses; but we have now to turn to the description of one in considerable detail by Vitruvius,—to turn, but at first with rather a heavy heart. The description as we read it cursorily is a mass of confusion and inconsistencies; few critics have satisfied themselves in an attempt to reconcile it to reason. The nearest approach to a plausible vindication of it has scarcely fulfilled the condition of being a subject of discussion, by meeting with a seconder. However, one more attempt has to be made, if only to mark distinctly where the description is manifestly at fault or involved in perplexity.

The Greek house, then, that Vitruvius describes as a contrast to the ordinary type of Roman house, is one of a high class,—an example from an earlier and more fortunate time, when refinement and wealth were at their acme in Greece. For anything that appears, he regards the structure as isolated; he gives no hint as to consideration of approaches, prospect, or surroundings, of outbuildings or garden; nor does he trouble himself to inform us about more than the ground-floor; upper chambers, cellars below, and stairs to give access to them, might not exist for any mention he spares of such; he gives no notice of windows opening externally or otherwise for light, or of any arrangements for artificial warming or escape of smoke.

Even as regards the ground-plan, he has scarcely taken us over the threshold before we stumble; we naturally assume that we are brought in for our survey of the mansion through the front door,—the principal entrance; but we find ourselves at once in the women's apartment, the *gynæconitis*, and come to a stand puzzled,—incredulous. There is the usual temptation to take refuge in an accusation of the text as disarranged and corrupt; but Vitruvius is too frequently confused for us to allow him the benefit of any such supposition in the present case, and we must not evade our own responsibility to make the best of the text as it stands, before imputing more than incorrigible clumsiness of exposition to our informant, to whom, after all, we have some reason to be grateful. He says:—"As the Greeks have no occasion for the *atrium* (of the Roman house), they do not construct any, but make a passage of no great breadth from the door of entrance, between the porter's room on one side and the stable on the other, and closed again by an interior door. This space from door to door is called in Greek the *thuroreion*. A peristyle is then entered; this has a portico on three sides; on the side which fronts south it has two *antæ*, very openly spaced, which carry beams, with a recess two-thirds of their interval in depth; some call this a *prostas* and others a *parastas*. Interiorly from this is the large apartment in which the materfamilias presides over the women occupied with spinning their wool. To the right and left of the *prostas* are placed the bed-chambers, of which one is called the *thalamus*, the other the *anti thalamus*. Around in the porticos are disposed the day-rooms for meals, bedrooms, and domestic offices. This part of the building is called the *gynæconitis*" (or feminine division).

Nothing, upon consideration, can be clearer than that Vitruvius introduces us into the house by what would be accounted a back door, by comparison with either the arrangements of the palace of Ulysses or of the modified Greek houses of Pompeii. His mention of the omission of an *atrium* at starting is misleading enough, as it is a natural inference that the next feature he describes is a substitution for it in position.

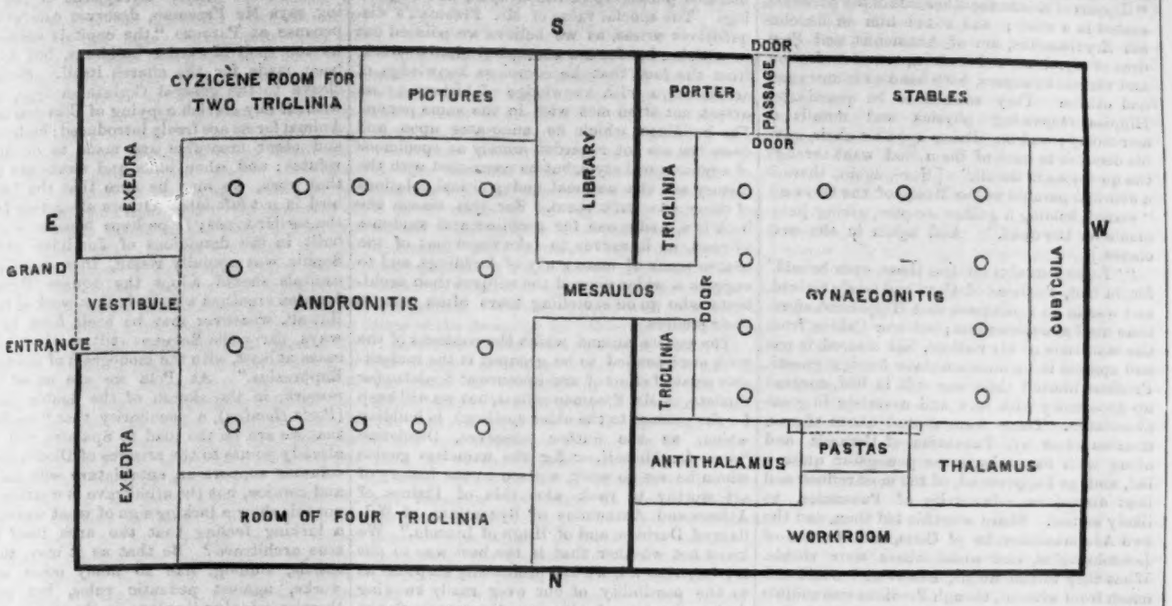
That a doorkeeper is mentioned elsewhere, as we shall see, as the custodian of the main entrance to an *andronitis* of a dignified mansion, makes no difference. We do not need the information that Aristotle volunteers, that in a large house, comings in and goings out required to be watched, and that the duty might be assigned to a slave who happened to be incompetent for other work. Such watchfulness was even more needed at the domestic end of the house than at the other, where, however, a doorkeeper would also be needful; the house was *amphithuros*, with an external door at both ends, like that by his knowledge of which Lysias himself, passing three doors in all, escaped from the emissaries of the thirty tyrants who were guarding the door of the front court. The porter's room would occupy but little space as compared with the stable, and therefore the entrance passage, which by its express narrowness, has none of the character of a main entrance, would not be in the centre of the front unless a portion of this side of the building was utilised for chambers entered from the peristyle within. The palace of Ulysses was entered, as we have seen, through the equivalent of a farm or stable yard, where animals could be turned loose or tied up; but there is an obvious propriety in the Vitruvian situation of the stables at what we have agreed must be regarded as the rear of the house.

The specification leaves us at liberty to construct rooms, if we please, not only opening under the porticos to right and left, but also under that fronting the *parastas* with back wall common to the stable. The *thalamus* is the best bedroom, and the *antithalamus* would come into use with a modern family as a second best or daughters' bedroom, or, it may be, as a nursery.

As the large workroom has to be entered from the *parastas* at the back, it would extend right and left more or less completely behind the *thalamus* and *antithalamus*. These apartments might naturally be contrived to be no deeper than the intermediate *parastas*, or one or both might have additional depth northwards. Whether the large workroom, equivalent of the *megaron* of Penelope, could receive sufficient light from the *parastas*, and if not, how else it was lighted, is not stated. Vitruvius in other passages gives directions as to admitting light through windows in situations confined by opposite houses, and there is no reason why high windows should not be inserted in the north walls of this *megaron*, if it was really an outer wall.

But this brings us to the question how Vitruvius conceived the rooms of the *andronitis* to be connected with those previously described. His description proceeds in terms which plainly show that he comes to the most stately and dignified portion of the house,—the true front,—last. "To the *gynæconitis* is attached a more spacious building (*domus*) with a broader peristyle and four porticos of equal height, unless that which fronts the south has the columns loftier; a peristyle thus arranged is called a Rhodian peristyle. This structure has a fine vestibule and a stately door of its own, and the porticos of the peristyle are adorned with stucco, plastering, and elaborate *lacunaria*. In the portico facing the north are a Cyzicene *triclinium* and *pinacotheca*; in that fronting the east, the library, *exedræ* opposite the west, and a square, or rectangular room, facing the south, of sufficient size to accommodate easily four *triclinia* with space for attendance and games. This room was for the men's entertainments, as it was not usual for the mothers of families to recline. This peristyle, which men occupied without feminine interference, was called the *andronitis*. . . . . There was a passage between the two courts which was called *mesaulos* as interposed between one *aule* and the other."

It will be seen that it comes out quite plainly in this account, that the true grand front and



Plan of the Greek House, after Vitruvius.

main entrance of the mansion is on the side of the *andronitis*, where it might be expected, and it is simply due to the awkwardness with which the description of Vitruvius takes the whole combined structure in reverse, that he has been charged with making the women's domain a general passageway to arrive at that of the men,—a monstrous arrangement anywhere; how much more so, then, at Athens? The entrance-door and vestibule which he assigns to the *andronitis* are emphatically described as important and fine, in contrast to the restricted *thyroreion*, or hall passage, which admits to the *gynæconitis*.

We are left without any specific guidance as to the situation of the connecting *mesaulos*, or the precise collocation of the twin peristyles; so far we are in no way bound to assume that the second peristyle described was placed on the north and south axis, and thus to the north of the first. Such a plan, indeed, would have a primary inconvenience. We should require to place chambers facing the north with their back wall common with that of the large workroom of the women, which would thus be shut in between them and the *thalamus* and *antithalamus* on the other side. We escape this difficulty if we interpret Vitruvius as conceiving that the *andronitis* lay on the east and west axis of the *gynæconitis*; the *mesaulos* then would run east and west from one of its side porticos. There is no reason why this passage, which may be of any breadth, should not be so central as to provide a vista from one peristyle to the other, when doors were opened. Assuming a Rhodian peristyle, the loftier columns of the north portico would be in front of the large room, the dining-room, with its liberal space for those exhibitions and amusements,—the dancing, music, and so forth, of which we have so lively a description in the "Symposium" of Xenophon. The loftier colonnade would admit more of the winter's sun to this apartment, and the greater breadth of the peristyle may be taken to imply such a degree of projection beyond the walls as would intercept the severest summer rays. If we suppose that the outer walls of the *andronitis* continued those of the *gynæconitis*, they might still have a greater lateral extent, and they would in any case have the extra space available for increasing the breadth of the porticos which in the other peristyle is devoted to the *thalamus*.

The *pinacotheca*, which Vitruvius says generally should be of liberal dimensions, is placed on the side of the peristyle facing a loftier colonnade for the benefit of the uniform northern light; and on the same side is a Cyzicene *triclinium*. The normal proportions of this apartment as given demand a ground-plan affording room for two *triclinia* arranged opposite to each other, and passage round them, and a height exceeding the breadth in dimension by one-half. The door was in the middle, with a shuttered window on each side, giving the guests a view, where possible, of verdure. This is an arrangement peculiarly appropriate for a cool summer dining-room, with the enlivenment of a prospect illuminated by the sun. It is noted in another passage that the reason for making the library face the east, is the avoidance of the fading of manuscripts and other damage to books from worms and mould especially, generated by the humid western and southerly winds. The portico fronting westward accommodated *exedræ*. These are rooms for conversation and lounging, which may be of very various forms and magnitude; if they are square, says our author in one passage, their height must be once and a half their breadth,—a rule which, of course, goes for little apart from a specified dimension for a particular plan. Rooms of considerable size are in his mind when he notices that the expanse of wall in an *exedra* prompts to peculiarly broad treatment in pictorial decoration.

If we assume that the larger peristyle is plotted to the eastward of the smaller, the chief entrance and stately vestibule may consistently occupy the centre of the eastern front, intermediately between *exedræ* to the right and left to be entered from the portico; one of these would be in easy communication with the adjacent smaller dining-room, and the other with the larger room for entertainment on the north side. The picture-gallery on the south side might naturally communicate with the library, which, situated under the west portico, would be well remote from any bustle about the entrance and near the more domestic portion of the building.

By this arrangement it will be observed that the stables are thrown to an exterior angle of the building, and are as isolated as circumstances allowed.

A subsidiary extension of the *andronitis* introduces us to some special details of Greek social life. Sets of rooms (*domunculæ*) were provided to the right and left of the great peristyle, exterior to its enclosing wall, where guests were provided with comfortable bedroom and *triclinium*,—sitting-room, in lodging-house phrase,—where they sojourned, with a private door to their independent apartments, and a latchkey or its equivalent (*januas proprias habentes secretam libertatem*). The relation of host and guest was so universal throughout Greece that there was every reason for it to settle down into a system which caused the least embarrassment to either party. The ordinary visit to an English country house has its unwritten law, which only allows of its exceptional extension beyond the three clear days,—"The rest day, the dressed day, and the pressed day,"—that is, the day when the guest expects to be most cordially urged to stay longer, and may expect to cause perplexity and astonishment, if, like Miss Edgeworth at Bowood, he should unexpectedly comply. The rule with the Greek host was to invite his guests to one formal entertainment, but he fulfilled his duty afterwards if, in addition to lodging, he kept them supplied with eggs, poultry, and farm produce generally.

All rules, however, can be relaxed on occasion, and by whom should they be so, but by one so wealthy as the Athenian Callias? And when so appropriately as at a congress of philosophers? The very liveliest picture we have of an Athenian interior, and that, at the very acme of the age of Pericles, is given by Plato. It seems worth while to translate this, and so to people the scene which we have been engaged in restoring, with dramatic,—with living interest. Socrates then is the narrator,—"With this understanding we set out, and when we had reached the portico we stopped, discussing some subject that had occurred to us on our way; and in order not to leave it incomplete, but that we might finish it first and then go in, we continued our argument in the portico, till at last we agreed. The porter, a eunuch, overheard us, as, I believe, to all appearance, the multitude of visitors had put him out of humour with visitors to the house, and, in consequence, when we knocked at the door, and he opened and saw us,—'Hey, day! Sophists again,' he says, 'he is engaged': at the same time he slammed the door with a will with both hands, as hard as he could. . . . . When at last we entered, we found Protagoras walking up and down the peristyle, and in a line with him there were walking on one side of him Callias, the son of Hipponicus, and his brother by the mother's side; Paralus, son of Pericles, and Charmides, son of Glaucon; and on the other side, the other son of Pericles, Xanthippus, and Philippides, son of Philomelus, and Antimœrus of Mende, who is the most esteemed of the scholars of Protagoras, and studies professionally with a view to become a Sophist himself. Certain others who followed behind these, listening to what was said, seemed, for the most part, to be some of the strangers whom Protagoras is wont to carry off from the cities he passes through, charming them with his voice like a very Orpheus, and they, under the influence of the charm, follow after his voice. Some of our own fellow-countrymen, too, were among the chorus. It was particularly pleasant to me to observe this said chorus, how handsomely they took care never to be in the way in front of Protagoras; but whenever he and they with him would turn, these listeners cleverly and orderly separated to either side, and, wheeling round, kept themselves in the happiest manner still in the rear.

"Next I beheld," as Homer says [the satirical allusion is to the visit of Ulysses to Hades],

"Hippias of Elis on the other side of the peristyle, seated in a chair; and round him on benches sat Eryximachus, son of Acumenus, and Phædrus of Myrrhine, and Andron, son of Androtion, and various strangers, both his own countrymen and others. They seemed to be questioning Hippias respecting physics and details of astronomy; and he, sitting upon his chair, gave his decision to each of them, and went through the questions in detail." [Here, again, there is a satirical parallel to the Minos of the Odyssey, "seated, holding a golden sceptre, giving judgments on the dead." And again in the next clause.]

"'There Tantalus no less these eyes beheld,' for, in fact, Prodicus of Ceus had lately arrived, and was in an apartment that Hipponicus aforetime used as a store-room; but now Callias, from the multitude of his visitors, had cleared it out and applied it to accommodate foreign guests. Prodicus himself then was still in bed, covered up apparently with furs and coverlets in great abundance. There were seated about him on couches close by, Pausanias of Ceramis, and along with Pausanias some youngster, quite a lad, and, as I apprehend, of the most refined and best disposition,—favourite of Pausanias, as likely as not. There was this lad then, and the two Adeimantuses, he of Cœtis, and the son of Leucolophides, and some others were visible. What they talked about, however, I could not catch from without, though Prodicus was audible enough,—a mighty wise man he appears to me, and a divine; but in consequence of the grave tone of his voice, a certain hum was produced in the room which made what he said indistinct. And when we had just come in, there came in also, meeting us, Alcibiades, the handsome, as you say he is, and I fall in with your opinion, and Callias, son of Callæschrus."

Leaving these ancient sophists to extricate themselves as best they may when they venture too confidently within reach of the octopus-like dialectic of the son of Sophroniscus, one word of warning and protest may be bestowed in conclusion against "the plan of a large Greek house with two courts," of which it is time that the career should come to an end. We trace it back from the sixpenny "History Primer on Old Greek Life," by the Rev. Mr. Mahaffy, to the "Dictionary of Greek and Roman Antiquities," and thence again backwards to the "Charicles" (1840) of W. A. Becker. The *excursus* of Becker on the Greek house is replete with learning that his successors might gratefully and gracefully give him credit for, if they omit doing so for his plan; this copied and re-copied plan is professedly founded on the description of Vitruvius, but is so divergent from it from first to last, as to be little better than a fanciful conjecture of what a Greek house ought to be. The scheme of the Marchese Galiani, in his edition of Vitruvius, is much more meritorious; one of his chief failures is due to a false text, which is corrected on better MS. authority by Scheider. There can be no greater contrast than that between the plans suggested by Perrault, architect of the façade of the Louvre, and Wilkins, except that they are equally inconsistent with the Latin author and the exigencies of Greek domestic life.

ARCHITECTURE IN THE NEIGHBOUR LANDS OF VENICE.

We prefer to express by the above heading the special interest which, from our point of view, is embodied in the volume actually entitled "Subject and Neighbour Lands of Venice," put forth by Dr. E. A. Freeman,* and which is intended as a companion to a former publication of his, "Architectural and Historical Sketches, chiefly Italian." Like the former work, the present one is, to a considerable extent, made up of articles which have appeared in a well-known weekly periodical, where we remember to have read some of them. The author, however, tells us that a larger proportion of matter in this volume is new to publication than was the case with the former one.

The interest of the work is, after all, chiefly architectural, and it seems intended, and is very well calculated, to serve as a guide-book to the architectural antiquities of a line of country which has not yet been overrun and made commonplace by innumerable tourists, nor brought before architectural readers in innumerable photographs, lithographs, and engravings. The special value of Mr. Freeman's disquisitions arises, as we believe we pointed out in noticing his former somewhat similar work, from the fact that he combines knowledge of architecture with knowledge of history to an extent not often met with in the same person. The buildings which he annotates upon and describes are not regarded merely as specimens of architectural style, but as connected with the history and the national and political relations of those who built them. For this reason the book is a useful one for architectural students to read, as it serves to take them out of the beaten track of mere study of buildings, and to suggest a wider view of the subject than architects who go on sketching tours often take to their studies.

The centre around which the contents of the book are intended to be grouped is the remarkable palatial effort of architecture at Spalatro (or Spalato, as Mr. Freeman calls it, but we will keep for the present to the older spelling), in building which, as the author observes, Diocletian "won for himself, or for the nameless genius whom he set to work, a place in the history of art worthy to rank alongside of Iktinos of Athens and Anthemius of Byzantium, of William of Durham, and of Hugh of Lincoln." We know not whether that is the best way to put it; for, after all, we are profoundly sceptical as to the possibility of our ever really knowing decisively whose brain actually contrived the architectural structure and design in these cases; but that the palace at Spalatro is as typical and significant a building as any of those referred to, admits of no question. It may, indeed, be questioned if there is any building in the world which more emphatically marks a great epoch in architectural history.

When we say the book is grouped around Spalatro as a centre, we do not imply that this is obviously or ostensibly so in the arrangement of the volume; but the attention is especially directed to those phases of architectural design of the Romanesque period which arose out of the hints worked out at Spalatro, and on the meaning of which Spalatro furnishes the best comment.

There is, however, a great deal of interest to the architectural student, even apart from Spalatro, in the line of route over which Mr. Freeman acts as guide, for everywhere we are among the beginnings of Gothic architecture; everywhere we are introduced to buildings which, besides their historical interest in the wider sense, are in regard to architecture as links between a great past and a great future. The five divisions of the route are into "Lombard Austria," "Trieste to Spalatro," "Spalatro and its Neighbours," "Spalatro to Cattaro," and "Venice in the Footsteps of the Normans." Much of the book, no doubt, would be chiefly interesting to those who either have gone, or intend to go, over the routes mentioned: the latter probably but a small band. But the general reader who is interested in architecture and its relations to history will every now and then come across facts and illustrations which are full of suggestiveness. The description of Aquileia will appeal strongly to those who look on travelling as something more than a way of killing time, or of conforming to fashion. The author gives happily the idea of the peculiar interest attaching to the place. "Aquileia has a character of its own; it is not a ruined or buried city; nor is it altogether like Trier or Ravenna, which, though fallen from their ancient greatness, are cities still. In the general feeling of the spot it has more in common with such a place as St. David's in our own island, that thorough 'church city,' where a great minster and its ecclesiastical establishment still live on amid surrounding desolation." Mr. Freeman usually has a comparison of this sort at hand, and thereby continually reminds the student either what things were in progress at the same time in different countries, or how similar ideas repeated themselves, or how far European architecture was or was not homogeneous in its progress at a certain period of history. The chapters on Parenzo and Pola are very interesting. The church of Parenzo Mr. Freeman pronounces to be a basilica of the time of Justinian, and one which "will hardly find out of Rome and Ravenna any building of its own class to surpass it." The church is, in fact, of very nearly the same period as San Vitale at Ravenna, but would seem to have some features of interest differing considerably from those which characterise the architectural detail of San Vitale. Every arch of the building, says Mr. Freeman, deserves careful study, because at Parenzo "the capitals seem not to be the spoil of earlier buildings, but to have been made for the church itself. Some still cleave to the general Corinthian type, though without any slavish copying of Classical models. Animal forms are freely introduced; bulls, swans, and other creatures are made to do duty as volutes; and when bulls and swans are set on that work, we may be sure that the Imperial bird is not left idle. Others altogether forsake the earlier types; it perhaps became a church built in the dominions of Justinian while St. Sophia was actually rising, that some of its capitals should adopt the square Byzantine form enwreathed with its basket-work of foliage. But all, whatever may be their form in other ways, carry the Ravenna stilt, marked, in some cases at least, with the monogram of the founder Euphrasius." At Pola we are called on to remark, in the sketch of the double gateway (*Porta Gemina*), a peculiarity that "reminds us that we are on the road to Spalatro, and which already points to the arcades of Diocletian. The columns support an entablature with its frieze and cornice, but the architrave is wanting. Does not this show a lurking sign of what was coming, a lurking feeling that the arch itself is the true architrave? Be that as it may, there it stands, sinning, like so many other ancient works, against pedantic rules, but perhaps thereby winning its place in the great series of architectural strivings of which the palace of Spalatro shows us the crowning point."*

On the road to Spalatro the author touches on other points of interest in the architecture of the Dalmatian district; among others, on the remarkable persistence of the Romanesque style up to very late dates in this region, one completely Romanesque church at Zara dating its consecration, we presume on good documentary evidence, from 1407. The tower of St. Mary at Zara, of which a sketch is given, is a remarkably fine example, in a simple form, of the dignity and solidity of architectural expression attainable in this style,—in this instance without a single touch of what can be called ornament of any kind. The chapter on Spalatro is very picturesquely written; the interest of the subject seems to have lifted Mr. Freeman above the usually rather level style of his writing on these subjects. He draws a brilliant antithesis in comparing Spalatro with Rome:—"By the banks of the Tiber the city of Romulus became the house of a single man; by the shores of the Hadriatic the house of a single man became a city." A passage from this chapter we may quote in full, giving the description of the first impression produced by the ruined palace, and the ideas which its place in architectural history not unnaturally suggests:—

"We land with the moon lighting up the water, with the stars above us, the northern wain shining on the Hadriatic, as if, while Diocletian was seeking rest by Salona, the star of Constantine was rising over York and Trier. Dimly rising above us we see, disfigured indeed, but not destroyed, the pillared front of the palace, reminding us of the Tabularium of Rome's own Capitol. We pass under gloomy arches, through dark passages, and presently we find ourselves in the centre of the palace and city, between those two renowned rows of arches which mark the greatest of all epochs in the history of the building art. We think how the man who re-organised the empire of Rome was also the man who first put harmony and consistency into the architecture of Rome. We think that if it was in truth the crown of Diocletian which passed to every Cæsar from the first Constantine to the last Francis, it was no less in the pile that rose into being at his word that the germ was planted which grew into Pisa and Durham, into Westminster and St. Ouen's. There is light enough to mark the columns put for the first time to their true Roman use, and we think how strange was the fate which called up on this spot the happy arrangement which had entered the brain of no earlier artist,—the arrangement which, but a few years later, was to be applied to another use in the basilica of the Lateran and in St. Paul without the walls. Yes, it is in the court of the persecutor, the man who boasted that he had wiped out the Christian superstition from the

* Sketches from the Subject and Neighbour Lands of Venice. By Edward A. Freeman, D.C.L., LL.D. With illustrations. London: Macmillan & Co. 1881.

* The building not long ago unearthed in Pompeii, with arches springing direct from the capitals of the columns, and of which we lately gave a view (p. 51, *ante*), should not be overlooked in considering this part of the history of architecture.

world, that we see the noblest forestalling of the long aisles of the Christian basilica. It is with thoughts like these,—thoughts pressing all the more on us where every outline is clear and every detail is invisible,—that we tread for the first time the court of Jovius,—the columns with their arches on either side of us, the vast bell-tower rising to the sky, as if to mock the art of those whose mightiest works might still seem only to grovel upon earth. Nowhere within the compass of the Roman world do we find ourselves more distinctly in the presence of one of the great minds of the world's history; we see that, alike in politics and in art, Diocletian breathed a living soul into a lifeless body. In the bitter irony of the triumphant faith, his mausoleum has become a church, his temple has become a baptistery, the great bell-tower rises proudly over his own work; his immediate dwelling-place is broken down and crowded with paltry houses; but the sea-front and the Golden Gate are still there amid all disfigurements, and the great peristyle stands almost unhurt, to remind us of the greatest advance that a single mind ever made in the progress of the building art."

After all, as we have already suggested, there still remains the question whether Diocletian is really to be credited with having imagined or inspired this great step in architecture, or whether it is due to the architect, whose name is unknown. On the whole, we are inclined to declare for Diocletian, and to think that a mind capable of great ideas in other subjects was not unlikely to have his own ideas on the architecture of his palace, and to have them carried out. But whether this was so or no, the significance of the work remains the same in an architectural sense, and the spirit in which Mr. Freeman muses over it is the spirit in which to feel the true significance of the connexion between architecture and history. A second chapter on revisiting the place gives a good deal more information as to the topography, architectural and otherwise, of Spalatro.

Very interesting is the chapter on the remains at Trau, with its stern Romanesque cathedral, of which a sketch is given, and in which some of the elements of Gothic architecture seem in a tentative manner to be just struggling into existence. The latter portion of the book, "Venice in the Footsteps of the Normans," is of much interest, especially the chapter dealing with some of the ancient buildings in Corfu. The interior of St. Jason and St. Sosipatros at Corfu, of which there is a sketch, exhibits solid and heavy round arcades and vaulting, rising from columns which show a strange mixture of Romanesque and Venetian feeling. But we must refer the reader to Mr. Freeman's pages to follow out the subject further.

In the preface the author observes that the illustrations of his former volume (already referred to) met with much criticism, with every word of which he himself agreed, but that he thinks the criticism would have been modified if his critics had seen the original sketches from which the illustrations were made. As the said illustrations were, we believe, reduced from the sketches by a fac-simile process (they had all the appearance of being so), we do not see how the criticism could have been much modified; but we are glad Mr. Freeman has the candour to admit that they were very bad, and congratulate him on not having disfigured his present volume with anything like them. The illustrations which are given in the latter are all light and sketchy in style, somewhat too much so in some cases, and none of them can be called effective; but they have the appearance of general truthfulness, and are certainly an immense improvement on those in the former volume, about which we felt bound to express ourselves strongly. The present work is a very interesting and useful contribution towards the study of a rather out-of-the-way corner of architectural history.

Employers' Liability Act.—An action, "Adams *v.* Nightingale," was brought at Southwark County Court on Monday by a carpenter for 200*l.* for damages sustained by the fall of a scaffold. Mr. Fitzgerald was for the plaintiff, and Mr. Kemp, Q.C., and Mr. Macdonell for the defendant. A question arose as to the serving of the six weeks' notice required by the Act. The notice was left at a box or portable office in the defendant's yard after business hours, and never came to his knowledge. The judge ruled this not to be a good notice, and nonsuited the plaintiff.

OBSERVATIONS ON THE CONVEYANCING AND LAW OF PROPERTY ACT, 1881.

OUR readers may very likely ask themselves, when they see the heading of this article, whether it has found its way by mistake into the columns of the *Builder*, and is a waif and stray from some legal journal. But it is no wandering creature, and finds itself in the *Builder* because the Legislature, with that singular want of clearness which distinguishes it in so many of its legislative exploits, has chosen to incorporate in an Act which is largely connected with extreme legal technicalities, some provisions which are of importance to the public at large, and especially to the readers of this journal. We hear a good deal from time to time of the necessity for codifying our laws, but it would be well if the Legislature would act on the primary principles which underlie and are the cause of codification, namely, the clear arrangement of separate topics in separate Acts. The Act in question, 44 & 45 Vict., c. 41, comes into operation on the 1st of January, 1882. As we have already said, there is much in it which can only be of interest to lawyers, and therefore we intend to touch solely on the few but noticeable points which are of more general importance. In Section 14, we find an enactment, the desirability for which occupied a good deal of public attention some two years ago. It will be a surprise to many to find a change somewhat vehemently discussed in the press effected quietly and with little notice in this technical statute. We allude to the question of the forfeiture of leases for breaches of covenant. As most of our readers are aware, it has by very many persons been considered as a grievous hardship that, if a lessee neglects to comply with some covenant in his lease, he should, therefore, forfeit his tenancy. On the other hand, it has been said that if covenants are made they should be observed, and that if the bonds of contracts and conditions are loosened no one will be sure that engagements which he has made will be observed by the party bound by them. On the contrary, it has been answered that if a man has suffered loss by the breach of a covenant, he should only receive a pecuniary recompense when that will meet the justice of the case. Let us now see how the Legislature has dealt with this matter. The first sub-section of Section 14 enacts that a right of re-entry or forfeiture for a breach of a covenant shall not be enforceable until the lessor serves on the lessee a notice specifying the breach complained of, and, if it can be remedied, calling upon him to do so, and in any case requiring him to make a pecuniary compensation. Nor is the covenant to be enforceable unless the lessee fails to do these two things which are required of him. Therefore, supposing a lessee has failed to insure his house, he will only be required to take out a policy within a reasonable time after he is required to do so by the lessor; the latter will not be able to take possession of the premises, because of the oversight of his tenant. Next, subsection 2 deals with cases in which the lessor has begun to enforce, by action or otherwise, his right of re-entry, and then the lessee may apply to the Court for relief, which, according to the circumstances, may be granted by the Court, which has full power over all questions of costs and damages. Here, again, is a further protection for the lessee. By Section 3 there are provisions applicable to the case of under-lessees, and the following sub-section refers to Parliamentary leases. The fifth strongly alters existing contracts, because it enacts that when a lease is limited to continue only as long as the lessee shall abstain from committing a breach of any covenant, it shall continue for any longer term for which it might exist but for such covenant. Thus, if in a twenty-one years' lease such a condition is found, and some breach of covenant is committed in the fifth year of the tenancy, still the tenant will be able to continue for the full term, whether the landlord be willing or not, subject to the former paying proper compensation for any damage caused by the non-observance of this covenant. There are, however, some exceptions to the somewhat sweeping character of the enactments upon which we have touched. Briefly stated, they are that Section 14 shall not extend to any covenant against assigning or underletting or forfeiting the premises in bankruptcy, or the levying of an execution on the tenant's interests, nor in the case of a mining lease to a covenant allowing the lessor to inspect the books, weighing-machines, &c., or the mine and its workings. Nor does the section alter the law as regards non-payment of rent. Still, even with these limitations, there can be no question that the session of 1881, so profitable a one for the tenants of Irish agricultural land, has not been barren for tenants of all classes in England. A tenant now may make a slip without giving a vindictive or a grasping landlord the opportunity of taking possession of his property when he has suffered no real injury, and so far it gives a greater security to the tenant, which must make his position one of greater satisfaction to himself. It is important to observe, too, that these provisions do not affect lessees only who begin tenancies next year, for the Act has a retrospective operation, and applies to all existing leases, "notwithstanding any stipulation to the contrary."

The next provisions upon which we will touch are also, as will be seen, not unbeneficial to tenants. At present a mortgagor cannot make a lease which will be binding on the mortgagee, who may at once, under such circumstances, without notice or demand, eject the lessee. But by the 18th section of this Act a mortgagor, while in possession, shall have full power to make leases, and also a mortgagee, while he is in possession, though he may not have obtained a decree of foreclosure. The kinds of leases which are allowed by the Act are, however, strictly defined, and are building leases for any term not exceeding ninety-nine years, and agricultural or occupation leases for any term not exceeding twenty-one years. It appears, however, to be somewhat absurd to make any such limitation, for why should a thirty years' lease, for example, or a twenty-five years' lease, be more injurious to a mortgagee than one of twenty-one years? Once the principle that mortgagors may make leases is conceded, there is no valid reason why there should be more than one limit to his power, and that limit is that they shall not injure the mortgagee's security. It has long been a settled principle in shipping law that a mortgagee of a ship cannot interfere with a charter of it by the mortgagor unless such charter diminishes the value of his security. A charter is only a lease of a ship for a particular voyage or period, and the same principle is as applicable to lands and houses as to ships. These seem to be the two most important general provisions of the new Act. We may take another opportunity of returning to it, but meanwhile all owners and tenants of land and houses should be made aware of the little kernel, so far as they are concerned, which is to be found within the rather large and very dry legislative nut called the Conveyancing and Law of Property Act, 1881.

THE DUDLEY GALLERY.

THE winter exhibition of cabinet pictures in oil, opened this week, contains some very interesting works, though the portion of the exhibition that we come to first in the order of hanging is not very promising. The best works, on the whole, are landscapes, figure pictures being neither very numerous nor in general very interesting, though there are exceptions. Mr. F. G. Cotman's "The Picture Book" (41), a pretty and carefully-finished interior with two figures, is a very agreeable little work. Mr. Dendy Sadler, who is everywhere just at present with his monks, shows us one of them coming down stairs with a goodly piece of beef on a dish, the sign of "A Feast Day" (101), but it is not the best the painter can do. "The Reluctant Model" (142), a studio scene where a painter is struggling with a recalcitrant lay figure, is a clever bit of humour well worked out. Mr. Dicksee's "Charmian," a quarter length of an Egyptian girl, is a fine piece of colour; it is rather inexpressive, and is not Shakspeare's Charmian; but then Shakspeare's Charmian is not Egyptian. Mr. C. N. Kennedy's "Miss Nelly Bray" (191), a portrait of a young girl seated in a chair, is more than satisfactory; a very artistic portrait. Mrs. Koberwein Terrell shows, in a head under the title "A Long Time Ago," the same power of giving interest to works which are half studies of expression and half of costume, with which she had already familiarised us under her former name: this painting exhibits her best style of work. A pretty head by Mr. R. J. Gordon, "Clarissa," not far from this, should be looked at. A really original little work is that by Mr. S. Newman Downard, "Au Revoir" (152), where a woman of the lower orders, thin and plain, but not uninteresting, stoops from a

window, which forms a frame to the figure, to say farewell to some one below; a canary hung in a cage by the window gives the one speck of bright colour in the painting, which is a very clever one. The figure subjects which it is worth while to mention specially are, however, really very few in number, and we almost pass them all (excepting Mr. Watson Nicol's "A Boycotter," a good study of Irish boy character) till we come to the screen, where we find the centre place occupied by a very pathetic little work by Mr. Arthur Stocks, "Her Last Sacrament" (414), an interior of a bed-chamber where an old dying woman, with two or three relatives and the clergyman, is receiving her last Communion. This is an unusual little picture, and its combination of unaffected pathos and forcible realistic painting without hardness, recals some of the qualities of Mulready, though with a sufficiently different style of execution. On the same screen are two pretty sketches in which figures are the principal objects, by Mr. J. W. Waterhouse, "Sweet Offerings" and "The Toilet" (413, 428), and a little interior with figures of a girl and a dog, "Farewell" (398), by Mr. Lorimer, which is worth looking at.

Two paintings by Mr. W. H. Titcomb, an English painter who has been in Burmah, are of interest, from their evidently uncompromising realism, though hard in effect; they illustrate a "Burmese Lady and Child" (154), and the "Call to Worship" in the interior of a Rangoon Buddhist monastery (353); a highly-finished interior of which the central object is an emaciated Buddhist priest in an orange-coloured robe. The paintings give us an insight into the realities of Burmese life. Mr. Titcomb is the son of the Bishop of Rangoon, and has a new field of study before him in the people of the locality and their customs.

Among the landscapes two of the most prominent deal with water; one of these is a view of our old friend the "Bridge of Sighs" (253), to which Mr. Macwhirter has really managed to give a new effect by choosing an opportune moment when the sunset gives one deep red gleam at the end of the long narrow avenue of buildings, and the water is golden therewith. This is an exceptionally successful picture in realising the effect and the feeling intended. We regret that it is impossible to say the same of the work in the centre place at the top of the room, by Mr. P. R. Morris, called "The Voice of the Deep" (175), which we at first took to be a view of Alpine scenery. It is, in fact, a study of a stormy beach by moonlight, but there is no motion in the waves, no drawing of the essential forms of water in disturbance. Mr. Morris is an admirable painter of several classes of objects, but the sea is not among his facilities. Among other landscapes may be mentioned Mr. Aumonier's "The Thames at Pangbourne" (153), and Mr. Cyrus Johnson's "Manor House, Great Chalfield" (163), a peculiar work, in which the house is seen in the middle distance over a kind of hazy effect of reeds and rushes; these, as foreground objects, should certainly be a little more made out; the effect is an unusual and pretty, but an artificial, one. "On the Way to Rye" is an effective sketch rather than picture (107), by Mr. C. E. Johnson. "A Passing Good Night," a Thames scene with barges (286), by Mr. Ernest Waterlow, is another work which may be characterised as a large sketch, but a very charming one. The same painter has also a forcible little sketch called "Burning Weeds" (26). Why are painters at the present day so exceedingly fond of pictures of burning weeds? We are certain to find the incident in at least one picture in every exhibition. Several landscapes by Mr. Knight and Mr. J. W. B. Knight exhibit the same qualities which usually characterise the works of these artists, with no falling off and no suggestion of novelty; but the works of both are so good in their way that they are never unwelcome. "On the Rother," by Mr. Dillon (316), is a very carefully-finished landscape, a little artificial and heated in colour.

One of the cleverest things in the exhibition is a small painting of fox-hounds leaping a fence towards the spectator, two of the dogs painted in the middle of their leap. This (71), which is by Mr. Thomas Blinks, is as clever a dog picture as we have seen for some time. Mr. Couldery, who has deserted cats for pug dogs, for the present, has an admirable study of one of those sapient-looking animals on the screen (400); and Mr. Dollman paints a capital picture of crows (279) studying the fate of one of their kind who has been hung up as an awful warning. There are two fine flower-pieces by M. Fantin; and an admirable little bit of flower and still life by Mr. Lance Calkin, "Pansies" (170), may be picked out from among other paintings of the same class that are all more or less good.

SOCIETY OF BRITISH ARTISTS.

This seems to be one of the society's fortunate occasions; the Winter Exhibition just opened this week is certainly a much better one than the last Spring Exhibition. The most ambitious among the figure-subjects is Signor Ludovici's "Feu-follet" (5), an idealisation of will-o'-the-wisp, represented by a life-size female figure dancing through the darkness, and apparently swinging from the right hand a light which catches and lights up the right side of the figure. It is a pretty fancy, and an effective way of showing the nude figure under an unusual light; perhaps hardly worth executing life-size, especially as some of the details of colouring and modelling are necessarily lost or obscured in the half-light in which it is painted. At the top of the room hangs a very clever picture by M. Helmick, an artist who has been making his way on the walls of the Royal Academy, "Presents for his Reverence" (144), a composition in which a large room is occupied by three figures only, two peasant women on the right who bring a basket of eggs and other contributions for his reverence, a thin old man seated on the left with his back to the spectator, and turning his head to examine his visitors and their offerings. The attitude of the old priest, who turns away from an immense volume on a desk at his left, is admirably expressive, and the artist has contrived to give sufficient incident to the whole canvas without disturbing the main motive of the composition at all. The picture is emphatically a "composition," in arrangement and in lighting, and has been carefully studied. Two small figure-subjects near this, "Mending a Pen" (139) and "Counsel for the Defence" (148), by Mr. J. Gow and Mr. J. Morgan respectively, both members of the society, are very good. A more important work than these last is an "Interior of a French School of Painting" under the direction of MM. Bougereau and Robert-Fleury, during a rest of the model (50). This, by Mr. W. H. Bartlett, is a powerfully-painted and interesting picture. Mr. Dendy Sadler, who is a member, exhibits (120) a clever painting of an old monk seated before a bureau, the contents of which have been turned out on the floor apparently in the search for the parchment embodying "The Grant," which he has at length found, and is scanning with great satisfaction. "Otter Hunting," by Mr. Noble (125), is a fine study of otter hounds, life-size, quite devoid of the neatness and over-finish which we so often see in pictures of sporting subjects. There is very sweet expression and refinement in the head of the young lady called "Innocence" (162) by Signor Ludovici, junior; but the drawing of the arm is rather rough. Mr. J. R. Reid's "Old and Young" (203) should be looked at. In the smaller rooms there is a good presentation of "Our Baby" (242) by Mr. A. E. Elmslie; and Mr. A. Hill, whose beautiful nude study in the Academy this year, under the name "Tibicina," will be remembered, has a clever small-scale "study in black" (370) of a figure draped only in black gauze. Mr. A. B. Donaldson's "The Ebbing Tide" (378), the title applying in a double sense to the sheet of water in the background, and to a dying knight in armour in the foreground, aims at pathetic feeling which it does not seem quite to realise.

Among landscapes, the sea-pieces of Mr. S. Ellis are the things that have most spirit and originality, which is rather a Hibernian way of putting it; but artistically, it may be said, sea-pieces rank as landscapes. "Squally Weather" (196) is a fresh and powerful work; we will not say that it is free from reminiscences of other more eminent painters of the sea. As usual, Mr. A. F. Grace's landscapes are among the best things in the collection; No. 30 is the most important, it has only some verses for a title, but the "Arun River" (365) is the best, and is a very beautiful thing. Among other landscapes, Mr. John White's "The Dart" (384) should be noticed, and Mr. Canty's "Home of the Wildfowl" (238), and the same painter's 179, from the "Cotter's Saturday Night"; Mr. Stuart Lloyd's "Southampton Water" (172), Mr. Wyllie's "Coal Derrick in Bagship Reach" (153), and Mr. Goodall's "Reedham Ferry" (147), a very fresh little bit of river with a sailing-boat coming down it. An admirable little work is "Crumbs" (425), by Mr. J. White which is also essentially a landscape, a small work showing some high qualities of expression and composition. There is a flower-piece, by M. Fantin, "Fleurs des Champs" (288), painted with his usual richness and force of colour, though it is a very heavy and loaded style in which to paint such delicate creations as wild flowers.

The water-colour collection is a good one, as indeed it generally is. Touching on one architectural subject, "Interior of Treves Cathedral," by Mr. Wyke Bayliss (634), while admiring its architectural truthfulness of detail, we regret a certain *too* great hardness and precision of effect, which makes the drawing look rather more like a good architectural draughtsman's perspective than an artist's work, which is not what we can generally say of Mr. Bayliss's drawings. His smaller picture, "Interior of Amiens Cathedral" (91), amongst the oil paintings, is a very agreeable work.

A MUSEUM OF CASTS.

The formation of a museum of casts is no new suggestion; the value of these aids to the study of art has long been admitted, and considerably before the existence of our own Academy, and indeed of any of the foreign academies, collections of casts of the great works of antiquity were formed. Early in the sixteenth century, after the French "discovery of Italy," as it has wittily been termed, one of the first duties of that art-loving monarch, Francis I., was to send back the painter Primaticcio to his country to collect casts, copies, and originals of the great works of sculpture then existing in Italy, and to this day not a few of these replicas, brought to France by Primaticcio, of the treasures of the Vatican, the Uffizi, and other famous Italian collections, will be found at the Louvre; indeed, one of the most interesting courts of that museum consists almost entirely of the casts obtained for Francis, and still serving as instructive lessons to the artists of Paris. As for the debt that England owes to Lord Arundel in the collections he made abroad, it may well be summed up in the words of Peacham, who, in his "Compleat Gentleman," says of Evelyn's friend, the original of Vandyk's familiar portrait, "to his liberal charges and magnificence this angle of the world oweth the first sight of Greek and Roman statues." Evelyn himself, too, may be ranked among those who have thoroughly understood and warmly urged the educational value of good examples to place before the student. The cultivated old diarist in his "Sculptura" (published in 1662) has sketched out at length a model scheme of an art-academy to be provided with casts, and in which was to be supplied ample instruction in drawing and modelling from life, in architecture and perspective, anatomy and geometry, lectures delivered, rewards and travelling studentships to Italy awarded; and let it be remarked, in these days of technical instruction, the suggestion is made "that some professors be well skilled in ornaments, fruits and flowers, birds, beasts, &c., that they may instruct the students in these subjects, which are of great use in our manufactories; and that drawing-masters for schools throughout the kingdom be appointed." The story of Kneller's private academy, which is mentioned by Walpole, that which old Thornhill suggested to George I., and which he himself eventually opened at his own house in James-street, Covent-garden, the long and active existence of the Academy in Peter's-court, St. Martin's-lane, while they form the historically known commencements of the Royal Academy, may all be said to be closely connected with the suggestion of the necessity for a Museum of Casts. As for Sir Thomas Lawrence's collection of casts, which he gathered at such expense, in our youth we remember to have seen it lodged in the cellars of the British Museum, neglected, and certainly never enlarged. It was, it will be remembered, one of the first duties, and one of the most important, of the newly-formed Crystal Palace Company to gather at immense expense, and under the direction of the most competent authorities, its invaluable and well-classified series of casts of the great works of sculpture and architecture down to our days,—a collection which, it may be remarked, though far from unknown to the public, cannot be said to have received the

attention it merits. When, a few years later, the South Kensington Museum was established, among its earliest possessions was a series of choice casts of famous works of art, since when additions have constantly been made to the collection, and a system of exchange with foreign Governments was encouraged. The Architectural Museum, now hidden away in Tufton-street, endeavoured, and not unsuccessfully, to gather a number of casts of works more especially interesting to the architectural student of Gothic art. From various causes, however, the Museum in Westminster has not achieved greatness.

The suggestion re-urged by the President of the Institute of Architects, and supported by the President of the Royal Academy, is, of course, of a more comprehensive and more scientific nature than has been attempted in any of the efforts above mentioned. With the example of Berlin, Munich, and Paris present in the minds of those who have enjoyed the privilege of visiting those cities, it is only too evident that there is in London, as, indeed, in all our great centres, a want of a museum of casts. The cast collection at Munich, in an inceptive condition, and so far but indifferently housed, comprises only copies of Classic works of art; it possesses a very complete collection, there being over 300 entries in the catalogue, consisting of a choice of all the great works known in the museums of Europe, not omitting even the works in the Munich Glyptothek. The collections at Dresden and Berlin are each also as complete; but it will, we think, be found that the Museum of the École de Beaux-Arts in Paris, particularly when it comes to have as an annexe at the Trocadéro Palace the comparative museum of French architectural casts planned by the late Viollet-le-Duc, and which is rapidly approaching completion, affords the most complete existing specimen of what such a museum should be.

When a museum, like that of the École des Beaux-Arts, is able to show to students a *full-sized* cast of an angle of the Parthenon from base to a slice of the pediment, and, as a *pendant* to this superb model, a full-sized cast of the two columns of the Græcostasis at Rome; and grouped round these in the Classic court a characteristic choice of statues ranging from the struggling commencements of the art of sculpture, as shown in the Tenean Apollo cast from the original at Munich, down to the Æginetan marbles, with fully-arranged casts of the pediment figures of the temple, in the excavations of which Professor Cockerell (as has been related in these columns) took so important a share; the Parthenaic pediment in carefully-arranged casts of the well-known figures, as also of that other group with which is so intimately connected the name of Cockerell; the Niobe pediment of the Pitti Gallery, with all the various other later familiar works of Greek and Roman sculpture, among them the Roman horses of St. Mark's ushering in the visitor,—a museum which in its classic court alone offers such a choice as this to the student, and enabling, as we have often seen, the professors after their lecture to point out to the pupils the examples which illustrate their teachings,—it affords, it will be admitted, most of the elements that can be desired. When in addition to this court,—open daily to the public, and on Sundays free to all,—with its adjoining pupils' studies also supplied with a number of other choice works specially lighted for the purposes of study,—the École des Beaux-Arts possesses a Mediæval and Renaissance court, in which can be seen from casts of the quaint Runic crosses from Kirk Braddon in the Isle of Man,—a present, by the way, of the South Kensington Museum, which has exchanged with the French Government several other works here exhibited,—in a specially-designed court, in which are shown, in a light resembling that of the *sagristia* of San Lorenzo, in which the originals exist, the series of the Medici monuments, together with the Moses (not placed, let it be remarked, as in our South Kensington Museum, far above the level of the eye, but in a position resembling that of the original in St. Petro in Vinculo, at Rome),—when, in addition to these, are grouped together as characteristic and numerous a collection of Mediæval and Renaissance works, Italian, French, and German, as the École possesses of Classic sculpture, it will be admitted that much has been done. We possess in England, scattered in different directions, most of the elements necessary for the formation of such a museum as that, the want of which has often been urged. It will be long, unfortunately, before we can hope to possess an establishment of such a peculiar character as the École des Beaux-Arts, with its interesting court-yard crowded with relics of many of the great architectural works of France gathered during the great Revolution by the archæologist, Alexandre Lenoir, the father of the present secretary, with its familiar *cour du mûrier* surrounded by its arcades, decorated with casts of the Elgin marbles, and more recently added to by the coloured copy of the charming della Robbia ware frieze of the Hospital del Ceppo at Pistoja; with its monument to poor Regnault; with a collection of casts as complete as that of which we have given some idea; a collection of copies of the works of the great painters, executed by the "Prix de Rome" students, among which is not least worthy of mention a full-sized copy, by Sigalon, of Michelangelo's "Last Judgment" in the Sistine Chapel, with, under the same roof, a whole series of *ateliers* for the young painters, sculptors, and architects; a "hemicycle" where the prizes are distributed, its walls decorated with the whole history of art in the persons of its celebrities, from the brush of Delaroche; a *salle des modèles* crowded with a mass of smaller casts, such as copies of the beautiful little terra-cotta figures unearthed at Tanagra, and without copies of which no collection of casts can be said to be complete; a huge hall, the well-known *Salle Melpomène* in which are periodically shown the results of the pupils competitions, the "Prix de Rome" pictures, &c. and an art library which, if not as complete as that of our South Kensington Museum, is supplied with all the necessary materials for artistic study, not least among these a bulky collection of the works of several generations of architects, "Prix de Rome" students, gathered in Greece and Italy.

Let this fact be remembered, that our want of such establishments as exist on the Continent, with the facilities given to the public to visit them, places our artists at a singular disadvantage in comparison with their foreign brethren. Our Science and Art Department in default of a by-some-sighed-for Minister of Fine Arts, should look to a point which before long public opinion will urge on its attention. Let us hope that their action when carried out will fully justify the belief of a possibility of "the young student being able to study the rudiments of his science without the necessity of going abroad," a belief entertained and expressed by an artist who may be said to owe almost the whole of his learning and the position he at present occupies to the education he has received abroad.

As bearing on the subject, we give in our present issue a view of the Gallery of Casts which has been founded in Vienna.

THE NEW EXAMINATION, AND WHAT IT INVOLVES.

AT the meeting of the Architectural Association, on the 25th ult., Mr. Aston Webb, President, in the chair, Professor T. Roger Smith read the following paper:—

The examination which all architects proposing to become Associates of the Institute will for the future have to pass comes into force this session, and this Association would hardly discharge the functions which have come to devolve upon it aright were it to take no notice of this circumstance. The step which has been taken in the establishing of this examination is one tending in the direction of measures which have at various times been warmly advocated by this Association. It is one which will largely affect our own members, inasmuch as we include in our ranks so large a proportion of the younger architects of London who are rising up into active practice. There is, therefore, every reason why we should devote an evening to the subject, and I am sincerely indebted to the committee for honouring me with an invitation to read a paper with reference to it.

There are few architectural matters which cannot be better understood by some reference to their history, than if you regard them simply as they present themselves at the present day. Though an examination which has never yet taken place cannot exactly boast of a history, still a little retrospect of the causes which led up to it may help us in understanding its scope. As far back as the oldest member present can remember, that is to say, in the days of Lyon's Inn Hall, the desirability of a diploma for architects, or at any rate of an examination, such as the members of several other learned and scientific professions have to pass, has been dwelt upon in this Association,—and the need of it has always been felt by a certain number of the members of the Institute. Eventually Professor Hayter Lewis, when he was secretary of the Institute, procured the appointment of a committee to consider this question and draw up a scheme for an entirely voluntary examination. The work of that committe was, a good deal of it, done by Mr. Arthur Ashpitel, Mr. John Papworth, Professor Lewis, and myself, and during part of our deliberations we had the co-operation of Professor Kerr. The Institute, as a body, I must confess, looked upon the scheme with coldness, perhaps with some jealousy, and to disarm this jealousy we were compelled to accept limitations which hampered it not a little. No kind of distinction or reward, not even a certificate, was to be gained by passing, no privilege, or grade, or title, was to be accorded to those who passed. The first examination took place in the year 1863, and it is melancholy to think that of those who conducted it, I am the only survivor. The examiners were Sir Gilbert Scott, Sir Digby Wyatt, and Mr. Arthur Ashpitel; the moderators, Mr. John W. Papworth and myself. The result was that eight candidates passed in the class of Proficiency, and in the following year seven, with the addition of two in the class of Distinction, for we had two classes to begin with, and altogether the honour of Distinction was gained by three candidates, all of them well-known members of this Association, Mr. Phéné Spiers, Mr. R. R. Bayne, and Mr. T. H. Watson. As years went on this examination languished, mainly, I believe, because it led to nothing; and modifications were introduced with the idea of making it more attractive to students; the most important changes being the abolition of the Class of Distinction; the introduction of a Preliminary Examination; the division of the Proficiency Examination into two portions, which a candidate might take in different places; some modifications of the subjects of Examinations; and last, but not least, the grant of a certificate, and, under some limitations, of the title of Graduate of the Institute. These changes seemed to work well, and the results of the Voluntary Examinations, before and after this introduction, may be summarised as follows:—Ten Examinations have been held during eighteen years. Three students have passed in Distinction, forty-three in Proficiency, and fifty-two in the Preliminary Examination, making a total of ninety-eight successful candidates, whose names you will find in the Brown Book, and many of whom you will recognise as having been in other ways successful since. I must now take a glance into the past, and remind you that some years ago a committee was appointed, at the suggestion of Mr. Horace Jones, to consider what steps could be taken to advance the welfare of the Institute. That committee's report was not agreed to by the general body, mainly on the ground that it advocated the grant of a new charter, and a second committee, which was thereupon appointed, considered the matter afresh. Among the recommendations which it made, this committee reported that after a certain date all Associates of the Institute ought to pass an Examination. The various recommendations of this report were agreed to substantially as they stood, and the changes recommended were adopted. The Examination about to take place is one of those changes, many of which appear to have been of essential service to the Institute, and through it to the profession. I propose now to give you some idea of what we may suppose to be intended by the establishment of this examination, and of what the examination itself will embrace. We may safely put the intention of the Institute as being to render the Associateship of their body a guarantee that the Associate has proved his fitness to be entrusted with work, so far as that fitness can be ascertained by an examination. At present a man is admitted an Associate because nothing is known against him, and something has been said in his favour; but it is not incumbent on him, and, indeed, would not be very possible for him, to prove to the satisfaction of the Council who receive his nomination, or of the general body who elect him, that he is properly qualified; and, accordingly, though Associateship of the Institute has a very considerable value, it is not at all so serviceable to those who have obtained it in the way of giving them standing in

provided with a damper to control the supply of air. Messrs. J. & J. McMillan here show their under-grate coaling apparatus, as applied to open grates and cooking-ranges.

Block XII.—Messrs. Musgrave & Co., of Belfast, have a large display of their patent ventilating slow-combustion stoves and air-warmers, for burning either coke or anthracite, in which a recently-patented system of air-jets is used to assist in the consumption of the smoke and gases. This well-known firm's "Ulster" smokeless stove-grate is very similar in appearance to a well-designed register-stove grate, but it is provided with a chamber for holding fresh fuel, which replenishes the fire as it burns away, but cannot become ignited until it reaches its proper position in the fireplace. One or two important improvements have lately been made in this grate, which, in its present form, is very well worthy of the attention of visitors. Mr. G. A. Spencer, of Southwark, exhibits an arrangement for feeding stoves and open grates in such a manner that the fresh fuel is introduced below the fire. The Coalbrookdale Company exhibit some fireplaces and cast-iron chimney-pieces and over-mantels in the Adam, Chippendale, and other styles, shown in conjunction with the "Kyrle" and other smokeless grates. The exhibits are distinguished by excellence of workmanship, and fully maintain the reputation of the company. Mr. E. R. Hollands, Newington-Green, shows his patent smoke-preventing fire-grate, in which the fresh fuel is inserted at the bottom of the fire.

Block XIII.—Mr. John M. Stanley, of Rhyl, shows cooking-range, kitchener, room-grate, and baker's oven, in which, by a patented arrangement of outlet flues he claims that the volatile gases are induced by the natural draught of the chimney to pass downward through the fire, and so smoke is prevented. Messrs. M. Feetham & Co., of Clifford-street, are exhibitors of grates, stoves, and kitchen-ranges. The Wilson Engineering Company, Holborn, show [their portable kitchen-ranges and stoves, for which they claim the merit of being almost perfectly smokeless.

Block XIV., which is at the west end of the eastern quadrant, adjoining the east end of the conservatory, is wholly occupied by Messrs. Doulton & Co.'s excellent display of tile and other stoves. This firm's slow-combustion radiating tile stoves have on previous occasions been noticed by us. They have come largely into favour, as they deserve to do from their cleanliness, cheerfulness, and efficiency, coupled with economy of fuel. They are thickly lined internally with fire-clay, and will burn for twelve hours or more without needing attention. A large tile stove suitable for use in public buildings is shown. In addition to the internal furnace provided in the smaller tile stoves, it is provided with an open fire-place, which can be used either alone or concurrently with the internal fire. Messrs. Doulton are also exhibitors of ornamental Doulton-ware vases or shafts for use in ventilating on the so-called "Tobin" principle. Their syphon-flue stove is another speciality well worthy of the attention of visitors to the Exhibition.

Block XV.—Mr. William Stobbs, Pimlico, exhibits two American productions, viz, Janes & Kirtland's "Beebe" kitchen-range, for which great things are claimed. The various castings of which it is built up are certainly specimens of finished workmanship. Mr. Stobbs's other exhibit is the Barstow Stove Company's "Crystal" fireplace heater, to burn coke or anthracite coal. It can be fitted to warm rooms above the one in which it may be fixed. Messrs. Newton, Chambers, & Co., of the Thorncliffe Ironworks, near Sheffield, exhibit their "Thorncliffe" improved close and open-fire cooking-range. Messrs. Yates, Haywood, & Co. (Limited) are exhibitors of slow-combustion and other stoves. Dr. Joseph Moore, of Thornton Heath, exhibits an open fire-grate, for use either with anthracite or bituminous coal. It is also constructed with the intention of preventing draughts in a room by precluding more air ascending the flue than is necessary for proper ventilation of the apartment. Messrs. Charles Churchill & Co., Finsbury, show the American "Greene" soft coal cooking-stoves and heating-stoves. Mr. Harry Hunt, Stoke Newington, shows the "Crown Jewel" base-burner anthracite coal-stove, which has previously been described by us.

Block XVI.—Mr. Herbert Lea, Warwick-street, Regent-street, exhibits the "Sunderland" stove. The "smoke-abater" coal-shovel, exhibited by the patentee, Mr. W. S. Melville, of Bow, is an ingenious though simple contrivance for quickly and easily feeding a fire with fresh fuel at the bottom of the grate. Messrs. Clark, Bunnett, & Co., Limited, Rathbone-place, exhibit Ingram's "Kaio Kapnos" fire-gate and kitchen ranges, constructed to burn coke, ordinary house-coal, and anthracite. These grates (which are the invention, we believe, of an architect) are stated to consume their own smoke, and can also be used as slow-combustion grates. The Radiator Range Company show their range and a fire-grate, in which the fire-box is brought forward from the back of the stove. Mr. John Cornforth, of Berners-street, is an exhibitor of open fire-grates designed to consume smoke.

Block XVII.—Messrs. Frederick Edwards & Son, of Great Marlborough-street, exhibit their new smoke-consuming slow-combustion grates, the invention of Mr. Edwards, jun., who is well known to many of our readers as a writer on warming and ventilation. In this grate a body of coals sufficient for a day or a night's consumption is put into the fire-basket or chamber, and upon the top of this mass a fire is made and the coal is allowed to burn gradually downwards. A blind or screen, supported by chains and balance-weights, is moved down by degrees in front of the body of burning fuel. For kitcheners, Messrs. Edwards exhibit drawings modifying Count Rumford's principles. Messrs. Barnard, Bishop, & Barnards, of Norwich, have a large and good display of well-designed stoves, kitcheners, and ranges, for slow combustion and otherwise, all constructed for burning anthracite and other smokeless coals. Among the specialities shown by this well-known firm are,—Everitt & Barnard's patent grate; Bartlett's patent grate; the "Anthracite Grate"; and Everitt & Barnard's slow-combustion, smoke-consuming fire-grate, the "Glow." These are all worthy of careful attention.

Block XVIII.—Messrs. Thomson, Sterne, & Co. (Limited), show Clerk's patent gas-engine. Some anthracite stoves shown in this block are exhibited by the patentee, Herr Franz Lönholdt, architect, Frankfort-on-the-Main.

Block XIX.—Messrs. Archibald Smith & Stevens, of Leicester-square, exhibit Russell's patent "Wonderful" self-feeding grates for burning anthracite and bituminous coal, coke, and cinders. This stove, which has been previously described in detail in our columns, is sure to attract the attention of visitors. The British Sanitary Company, Glasgow, show their patent ventilating stove-grate and gaselier canopy. The stove-grate is formed as an enclosed chamber with a glass door and panels. A portable grate, which holds the fire, stands within this chamber. As we understand it, the canopy over the gaselier, when placed in communication with the stove-chamber, is intended to draw off the vitiated air caused by the combustion of the gas. Mr. William Lawrence, of St. Mary Axe, exhibits a variety of stoves for domestic purposes. Mr. G. J. Cox, of the Maidstone Gasworks, exhibits a number of newly-patented inventions for heating and cooking by gas, and he also shows Captain T. S. Clarke's patent smoke-consuming hot-air ventilating grate. Mr. A. C. Eugert shows his coking-box for the prevention of smoke fitted to an ordinary fire-grate. The Derwent Foundry Company, Derby, show smoke-burning register-grates and a smoke-burning gill stove.

Block XX.—Messrs. Thomas Potter & Sons, of Oxford-street, show the patent smoke-consuming revolving fire-grate, the invention of Mr. H. Saxon Snell, architect. It is simple in action, the fire-box or cage being made to revolve upon a pivot, so that when the fire-box is reversed, fresh fuel can be introduced through a hinged grating on its under side, and this fresh fuel is, by the inversion of the the grate, brought undermost. The "Thermhydric" ventilating hot-water open fire-grate, also the invention of the same gentleman, is among the other exhibits of Messrs. Potter & Sons. It is being largely used, with, we are informed, very satisfactory results. Mr. Samuel Rigby, of Blackpool, exhibits smoke-preventing apparatus, which he claims to be applicable to all open coal-fire grates for domestic use. Mr. J. Russell, of Neath, shows a patent flue or blower designed to remedy smoky fire-places. Mr. Henry E. Hoole, Sheffield, shows a radiating and reflecting grate for burning bituminous coal without smoke, and an "interchangeable" grate for burning bituminous or anthracite coal. Messrs. A. Boyd & Son, New Bond-street, show a ventilating warm-air grate for domestic use, in which the iron body, which is lined with fire-clay, is made zigzag to increase the heating-surface. Messrs. Smith & Wellstood, of Ludgate-circus, show anthracite coal and coke burning stoves. Mr. William White, F.S.A., of Wimpole-street, is one of several architects who are exhibitors. Mr. White has here, as in previous exhibitions and in connexion with other subjects, shown that he is capable of uniting practice with theory. His "Shrewsbury" warming-apparatus, and the "Shrewsbury" open-grate radiator and air-warmer, here shown, will be examined with interest. Economy of heat and fuel, and certainty and continuity of action for a great many hours without attention, are among the merits claimed for these appliances.

Block XXI.—Messrs. Brown & Green, of Luton and Bishopsgate-street, are exhibitors of smoke-consuming kitcheners for bituminous coal, and register stoves for anthracite coal. Among their specialities well worth attention are the "Kensington" and "Luton" register stoves. Messrs. J. F. Farwig & Co., of Queen-street, show George's slow-combustion "Calorigen," to burn anthracite or coke. Mr. Robert H. Griffin, of Guilford-street, exhibits his patent ventilating, heating, and smoke-consuming register stove or open fire-grate, of which we have spoken before.

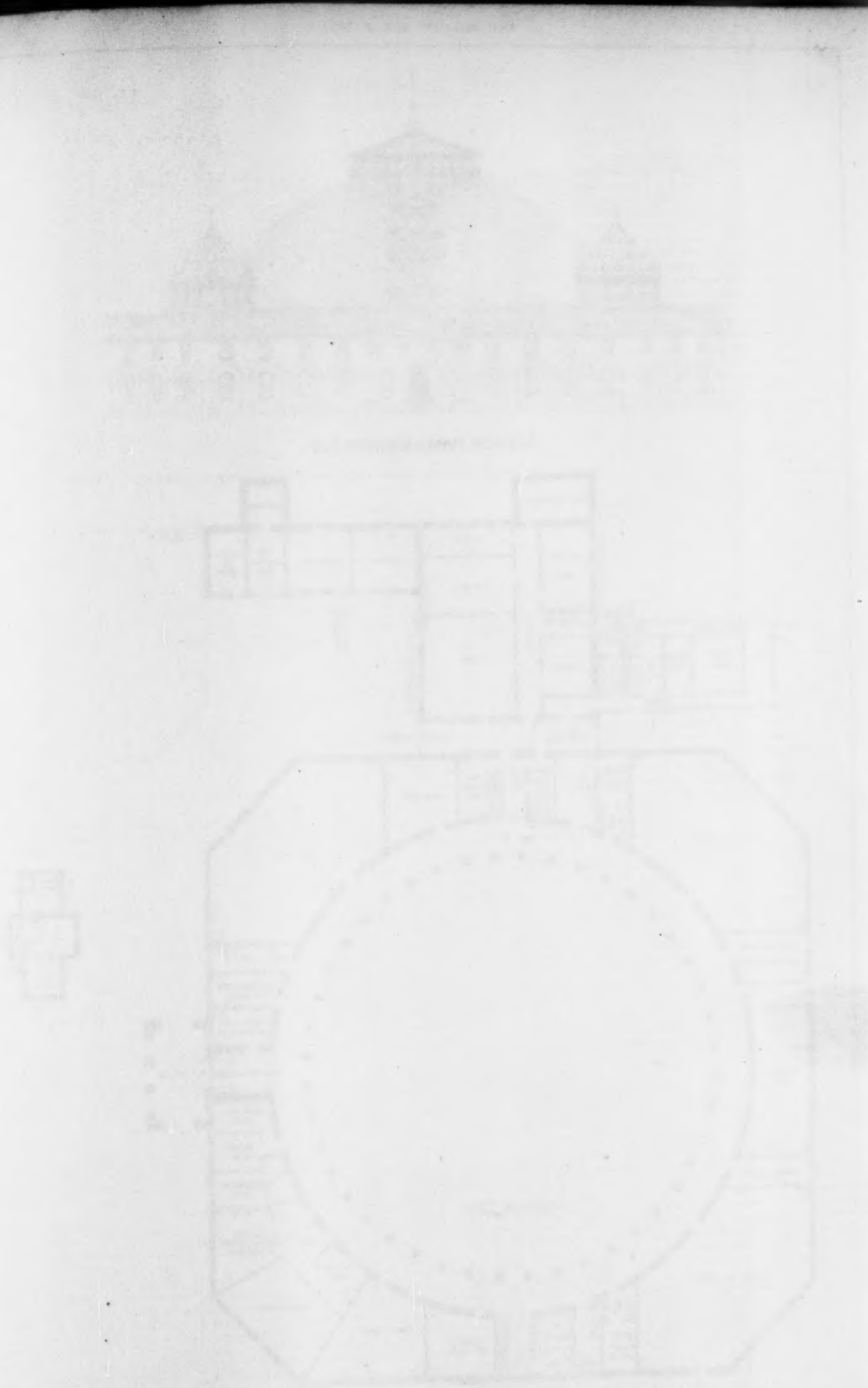
Block XXII.—Mr. Francis Hammond, of Chandos-street, exhibits a hall stove fitted with smokeless fire on Dr. Siemens's principle. Messrs. Deane & Co., King William-street, show Fletcher's patent gas-cooking and heating apparatus, and Crane's patent register grate for burning anthracite, which we described not long ago. The Silber Light Company have a variety of stoves for paraffin and gas.

Block XXIII.—Messrs. Waddell & Main, of Glasgow, show Dr. Siemens's gas and coke fire-grate. There is a hot-air chamber underneath the grate which heats air to between 600° and 700° before it impinges on the gas-jets in front of the grate, performing, in fact, the function of a miniature hot blast. Messrs. James Slater & Co., of Holborn, are exhibitors of steam and gas cooking apparatus. Messrs. George Haller & Co., of Lime-street, show Kohlhofer's hot-air gas-stoves, and Messrs. Ritchie & Co., of St. Swithin's-lane, their "Lux Calor" ventilating stoves. Messrs. Strode & Co., of Cockspur-street, show Schönheyder's patent sanitary stove, containing some recent improvements for heating, lighting, and ventilating, and a great variety of gas fires, stoves, and lighting apparatus, for the excellence of which this firm's name is a synonym. Messrs. Ewart & Son, of Euston-road, exhibit the "Empress" smoke-cure, the "Amethysta" stove, the "New Crown" boiler, ventilating gas-stoves, &c. The catalogue assigns them a position in this Block, but when we saw them they were in Block VII., near the north end of the western arcade.

Block XXIV.—Messrs. J. C. Stark & Co., Torquay, show Stark's patent pure-air ventilating stove, and gas-heating and ventilating stoves. Messrs. John Wright & Co., of Birmingham, are also exhibitors of apparatus for cooking and heating by gas. Messrs. Lewis & Lewis, of Cambridge Heath-road, show a newly-invented gas-engine for small power. The executors of the late Mr. J. E. H. Andrew, of Stockport, show a two-man power "Bisschop" gas-engine. Messrs. Crossley Brothers, Limited show a 2-horse power "Otto" silent gas engine, intended to work with ordinary coal-gas, but here worked with the "Dowson Economic Gas."

Block XXV.—Messrs. George Wright & Co., of Rotherham and Queen Victoria-street, show their patent "Bi-valve" open fire-grates, fitted with, or adapted for, Dr. Siemens's gas and coke apparatus, securing economy of fuel and prevention of smoke without sacrificing the cheerful appearance of an open English fire-place. The same firm are exhibitors of their "Economic Cooker" (previously noticed by us with commendation) and of warm-air stoves. Their exhibit is a good one. The Dowson Economic Gas Company, whose product has already been mentioned, show their gas-producing apparatus at work.

Block XXVI.—Mr. C. R. Stevens, of Lewisham, shows a steam and hot-air heater and a circulating hot-water apparatus. These appliances appear to give good results with a comparatively small consumption of gas, which is the fuel used. Messrs. W. Sugg & Co., of Westminster, show their specialities in the way of gas fittings and burners. Referring to gas-



window, which forms a frame to the figure, to say farewell to some one below; a canary hung in a cage by the window gives the one speck of bright colour in the painting, which is a very clever one. The figure subjects which it is worth while to mention specially are, however, really very few in number, and we almost pass them all (excepting Mr. Watson Nicol's "A Boycotter," a good study of Irish boy character) till we come to the screen, where we find the centre place occupied by a very pathetic little work by Mr. Arthur Stocks, "Her Last Sacrament" (414), an interior of a bed-chamber where an old dying woman, with two or three relatives and the clergyman, is receiving her last Communion. This is an unusual little picture, and its combination of unaffected pathos and forcible realistic painting without hardness, recals some of the qualities of Mulready, though with a sufficiently different style of execution. On the same screen are two pretty sketches in which figures are the principal objects, by Mr. J. W. Waterhouse, "Sweet Offerings" and "The Toilet" (413, 428), and a little interior with figures of a girl and a dog, "Farewell" (398), by Mr. Lorimer, which is worth looking at.

Two paintings by Mr. W. H. Titcomb, an English painter who has been in Burmah, are of interest, from their evidently uncompromising realism, though hard in effect; they illustrate a "Burmese Lady and Child" (154), and the "Call to Worship" in the interior of a Rangoon Buddhist monastery (353); a highly-finished interior of which the central object is an emaciated Buddhist priest in an orange-coloured robe. The paintings give us an insight into the realities of Burmese life. Mr. Titcomb is the son of the Bishop of Rangoon, and has a new field of study before him in the people of the locality and their customs.

Among the landscapes two of the most prominent deal with water; one of these is a view of our old friend the "Bridge of Sighs" (253), to which Mr. Macwhirter has really managed to give a new effect by choosing an opportune moment when the sunset gives one deep red gleam at the end of the long narrow avenue of buildings, and the water is golden therewith. This is an exceptionally successful picture in realising the effect and the feeling intended. We regret that it is impossible to say the same of the work in the centre place at the top of the room, by Mr. P. R. Morris, called "The Voice of the Deep" (175), which we at first took to be a view of Alpine scenery. It is, in fact, a study of a stormy beach by moonlight, but there is no motion in the waves, no drawing of the essential forms of water in disturbance. Mr. Morris is an admirable painter of several classes of objects, but the sea is not among his facilities. Among other landscapes may be mentioned Mr. Aumonier's "The Thames at Pangbourne" (153), and Mr. Cyrus Johnson's "Manor House, Great Chalfield" (163), a peculiar work, in which the house is seen in the middle distance over a kind of hazy effect of reeds and rushes; these, as foreground objects, should certainly be a little more made out; the effect is an unusual and pretty, but an artificial, one. "On the Way to Rye" is an effective sketch rather than picture (107), by Mr. C. E. Johnson. "A Passing Good Night," a Thames scene with barges (286), by Mr. Ernest Waterlow, is another work which may be characterised as a large sketch, but a very charming one. The same painter has also a forcible little sketch called "Burning Weeds" (26). Why are painters at the present day so exceedingly fond of pictures of burning weeds? We are certain to find the incident in at least one picture in every exhibition. Several landscapes by Mr. Knight and Mr. J. W. B. Knight exhibit the same qualities which usually characterise the works of these artists, with no falling off and no suggestion of novelty; but the works of both are so good in their way that they are never unwelcome. "On the Rother," by Mr. Dillon (316), is a very carefully-finished landscape, a little artificial and heated in colour.

One of the cleverest things in the exhibition is a small painting of fox-hounds leaping a fence towards the spectator, two of the dogs painted in the middle of their leap. This (71), which is by Mr. Thomas Blinks, is as clever a dog picture as we have seen for some time. Mr. Couldery, who has deserted cats for pug dogs, for the present, has an admirable study of one of those sapient-looking animals on the screen (400); and Mr. Dollman paints a capital picture of crows (279) studying the fate of one of their kind who has been hung up as an awful warning. There are two fine flower-pieces by M. Fantin; and an admirable little bit of flower and still life by Mr. Lance Calkin, "Pansies" (170), may be picked out from among other paintings of the same class that are all more or less good.

SOCIETY OF BRITISH ARTISTS.

This seems to be one of the society's fortunate occasions; the Winter Exhibition just opened this week is certainly a much better one than the last Spring Exhibition. The most ambitious among the figure-subjects is Signor Ludovici's "Feu-follet" (5), an idealisation of will-o'-the-wisp, represented by a life-size female figure dancing through the darkness, and apparently swinging from the right hand a light which catches and lights up the right side of the figure. It is a pretty fancy, and an effective way of showing the nude figure under an unusual light; perhaps hardly worth executing life-size, especially as some of the details of colouring and modelling are necessarily lost or obscured in the half-light in which it is painted. At the top of the room hangs a very clever picture by M. Helmick, an artist who has been making his way on the walls of the Royal Academy, "Presents for his Reverence" (144), a composition in which a large room is occupied by three figures only, two peasant women on the right who bring a basket of eggs and other contributions for his reverence, a thin old man seated on the left with his back to the spectator, and turning his head to examine his visitors and their offerings. The attitude of the old priest, who turns away from an immense volume on a desk at his left, is admirably expressive, and the artist has contrived to give sufficient incident to the whole canvas without disturbing the main motive of the composition at all. The picture is emphatically a "composition," in arrangement and in lighting, and has been carefully studied. Two small figure-subjects near this, "Mending a Pen" (139) and "Counsel for the Defence" (148), by Mr. J. Gow and Mr. J. Morgan respectively, both members of the society, are very good. A more important work than these last is an "Interior of a French School of Painting" under the direction of MM. Bougereau and Robert-Fleury, during a rest of the model (50). This, by Mr. W. H. Bartlett, is a powerfully-painted and interesting picture. Mr. Dendy Sadler, who is a member, exhibits (120) a clever painting of an old monk seated before a bureau, the contents of which have been turned out on the floor apparently in the search for the parchment embodying "The Grant," which he has at length found, and is scanning with great satisfaction. "Otter Hunting," by Mr. Noble (125), is a fine study of otter hounds, life-size, quite devoid of the neatness and over-finish which we so often see in pictures of sporting subjects. There is very sweet expression and refinement in the head of the young lady called "Innocence" (162) by Signor Ludovici, junior; but the drawing of the arm is rather rough. Mr. J. R. Reid's "Old and Young" (203) should be looked at. In the smaller rooms there is a good presentation of "Our Baby" (242) by Mr. A. E. Elmslie; and Mr. A. Hill, whose beautiful nude study in the Academy this year, under the name "Tibicina," will be remembered, has a clever small-scale "study in black" (370) of a figure draped only in black gauze. Mr. A. B. Donaldson's "The Ebbing Tide" (378), the title applying in a double sense to the sheet of water in the background, and to a dying knight in armour in the foreground, aims at pathetic feeling which it does not seem quite to realise.

Among landscapes, the sea-pieces of Mr. S. Ellis are the things that have most spirit and originality, which is rather a Hibernian way of putting it; but artistically, it may be said, sea-pieces rank as landscapes. "Squally Weather" (196) is a fresh and powerful work; we will not say that it is free from reminiscences of other more eminent painters of the sea. As usual, Mr. A. F. Grace's landscapes are among the best things in the collection; No. 30 is the most important, it has only some verses for a title, but the "Arun River" (365) is the best, and is a very beautiful thing. Among other landscapes, Mr. John White's "The Dart" (384) should be noticed, and Mr. Canty's "Home of the Wildfowl" (238), and the same painter's 179, from the "Cotter's Saturday Night"; Mr. Stuart Lloyd's "Southampton Water" (172), Mr. Wyllie's "Coal Derrick in Bagship Reach" (153), and Mr. Goodall's "Reedham Ferry" (147), a very fresh little bit of river with a sailing-boat coming down it. An admirable little work is "Crumbs" (425), by Mr. J. White which is also essentially a landscape, a small work showing some high qualities of expression and composition. There is a flower-piece, by M. Fantin, "Fleurs des Champs" (288), painted with his usual richness and force of colour, though it is a very heavy and loaded style in which to paint such delicate creations as wild flowers.

The water-colour collection is a good one, as indeed it generally is. Touching on one architectural subject, "Interior of Treves Cathedral," by Mr. Wyke Bayliss (634), while admiring its architectural truthfulness of detail, we regret a certain *too* great hardness and precision of effect, which makes the drawing look rather more like a good architectural draughtsman's perspective than an artist's work, which is not what we can generally say of Mr. Bayliss's drawings. His smaller picture, "Interior of Amiens Cathedral" (91), amongst the oil paintings, is a very agreeable work.

A MUSEUM OF CASTS.

The formation of a museum of casts is no new suggestion; the value of these aids to the study of art has long been admitted, and considerably before the existence of our own Academy, and indeed of any of the foreign academies, collections of casts of the great works of antiquity were formed. Early in the sixteenth century, after the French "discovery of Italy," as it has wittily been termed, one of the first duties of that art-loving monarch, Francis I., was to send back the painter Primaticcio to his country to collect casts, copies, and originals of the great works of sculpture then existing in Italy, and to this day not a few of these replicas, brought to France by Primaticcio, of the treasures of the Vatican, the Uffizi, and other famous Italian collections, will be found at the Louvre; indeed, one of the most interesting courts of that museum consists almost entirely of the casts obtained for Francis, and still serving as instructive lessons to the artists of Paris. As for the debt that England owes to Lord Arundel in the collections he made abroad, it may well be summed up in the words of Peacham, who, in his "Compleat Gentleman," says of Evelyn's friend, the original of Vandyk's familiar portrait, "to his liberal charges and magnificence this angle of the world oweth the first sight of Greek and Roman statues." Evelyn himself, too, may be ranked among those who have thoroughly understood and warmly urged the educational value of good examples to place before the student. The cultivated old diarist in his "Sculptura" (published in 1662) has sketched out at length a model scheme of an art-academy to be provided with casts, and in which was to be supplied ample instruction in drawing and modelling from life, in architecture and perspective, anatomy and geometry, lectures delivered, rewards and travelling studentships to Italy awarded; and let it be remarked, in these days of technical instruction, the suggestion is made "that some professors be well skilled in ornaments, fruits and flowers, birds, beasts, &c., that they may instruct the students in these subjects, which are of great use in our manufactories; and that drawing-masters for schools throughout the kingdom be appointed." The story of Kneller's private academy, which is mentioned by Walpole, that which old Thornhill suggested to George I., and which he himself eventually opened at his own house in James-street, Covent-garden, the long and active existence of the Academy in Peter's-court, St. Martin's-lane, while they form the historically known commencements of the Royal Academy, may all be said to be closely connected with the suggestion of the necessity for a Museum of Casts. As for Sir Thomas Lawrence's collection of casts, which he gathered at such expense, in our youth we remember to have seen it lodged in the cellars of the British Museum, neglected, and certainly never enlarged. It was, it will be remembered, one of the first duties, and one of the most important, of the newly-formed Crystal Palace Company to gather at immense expense, and under the direction of the most competent authorities, its invaluable and well-classified series of casts of the great works of sculpture and architecture down to our days,—a collection which, it may be remarked, though far from unknown to the public, cannot be said to have received the

attention it merits. When, a few years later, the South Kensington Museum was established, among its earliest possessions was a series of choice casts of famous works of art, since when additions have constantly been made to the collection, and a system of exchange with foreign Governments was encouraged. The Architectural Museum, now hidden away in Tufton-street, endeavoured, and not unsuccessfully, to gather a number of casts of works more especially interesting to the architectural student of Gothic art. From various causes, however, the Museum in Westminster has not achieved greatness.

The suggestion re-urged by the President of the Institute of Architects, and supported by the President of the Royal Academy, is, of course, of a more comprehensive and more scientific nature than has been attempted in any of the efforts above mentioned. With the example of Berlin, Munich, and Paris present in the minds of those who have enjoyed the privilege of visiting those cities, it is only too evident that there is in London, as, indeed, in all our great centres, a want of a museum of casts. The cast collection at Munich, in an inceptive condition, and so far but indifferently housed, comprises only copies of Classic works of art; it possesses a very complete collection, there being over 300 entries in the catalogue, consisting of a choice of all the great works known in the museums of Europe, not omitting even the works in the Munich Glyptothek. The collections at Dresden and Berlin are each also as complete; but it will, we think, be found that the Museum of the École de Beaux-Arts in Paris, particularly when it comes to have as an annexe at the Trocadéro Palace the comparative museum of French architectural casts planned by the late Viollet-le-Duc, and which is rapidly approaching completion, affords the most complete existing specimen of what such a museum should be.

When a museum, like that of the École des Beaux-Arts, is able to show to students a *full-sized* cast of an angle of the Parthenon from base to a slice of the pediment, and, as a *pendant* to this superb model, a full-sized cast of the two columns of the Græcostasis at Rome; and grouped round these in the Classic court a characteristic choice of statues ranging from the struggling commencements of the art of sculpture, as shown in the Tenean Apollo cast from the original at Munich, down to the Æginetan marbles, with fully-arranged casts of the pediment figures of the temple, in the excavations of which Professor Cockerell (as has been related in these columns) took so important a share; the Parthenaic pediment in carefully-arranged casts of the well-known figures, as also of that other group with which is so intimately connected the name of Cockerell; the Niobe pediment of the Pitti Gallery, with all the various other later familiar works of Greek and Roman sculpture, among them the Roman horses of St. Mark's ushering in the visitor,—a museum which in its classic court alone offers such a choice as this to the student, and enabling, as we have often seen, the professors after their lecture to point out to the pupils the examples which illustrate their teachings,—it affords, it will be admitted, most of the elements that can be desired. When in addition to this court,—open daily to the public, and on Sundays free to all,—with its adjoining pupils' studies also supplied with a number of other choice works specially lighted for the purposes of study,—the École des Beaux-Arts possesses a Mediæval and Renaissance court, in which can be seen from casts of the quaint Runic crosses from Kirk Braddon in the Isle of Man,—a present, by the way, of the South Kensington Museum, which has exchanged with the French Government several other works here exhibited,—in a specially-designed court, in which are shown, in a light resembling that of the *sagristia* of San Lorenzo, in which the originals exist, the series of the Medici monuments, together with the Moses (not placed, let it be remarked, as in our South Kensington Museum, far above the level of the eye, but in a position resembling that of the original in St. Petro in Vinculo, at Rome),—when, in addition to these, are grouped together as characteristic and numerous a collection of Mediæval and Renaissance works, Italian, French, and German, as the École possesses of Classic sculpture, it will be admitted that much has been done. We possess in England, scattered in different directions, most of the elements necessary for the formation of such a museum as that, the want of which has often been urged. It will be long, unfortunately, before we can hope to possess an establishment of such a peculiar character as the École des Beaux-Arts, with its interesting court-yard crowded with relics of many of the great architectural works of France gathered during the great Revolution by the archæologist, Alexandre Lenoir, the father of the present secretary, with its familiar *cour du mûrier* surrounded by its arcades, decorated with casts of the Elgin marbles, and more recently added to by the coloured copy of the charming della Robbia ware frieze of the Hospital del Ceppo at Pistoja; with its monument to poor Regnault; with a collection of casts as complete as that of which we have given some idea; a collection of copies of the works of the great painters, executed by the "Prix de Rome" students, among which is not least worthy of mention a full-sized copy, by Sigalon, of Michelangelo's "Last Judgment" in the Sistine Chapel, with, under the same roof, a whole series of *ateliers* for the young painters, sculptors, and architects; a "hemicycle" where the prizes are distributed, its walls decorated with the whole history of art in the persons of its celebrities, from the brush of Delaroche; a *salle des modèles* crowded with a mass of smaller casts, such as copies of the beautiful little terra-cotta figures unearthed at Tanagra, and without copies of which no collection of casts can be said to be complete; a huge hall, the well-known *Salle Melpomène* in which are periodically shown the results of the pupils competitions, the "Prix de Rome" pictures, &c. and an art library which, if not as complete as that of our South Kensington Museum, is supplied with all the necessary materials for artistic study, not least among these a bulky collection of the works of several generations of architects, "Prix de Rome" students, gathered in Greece and Italy.

Let this fact be remembered, that our want of such establishments as exist on the Continent, with the facilities given to the public to visit them, places our artists at a singular disadvantage in comparison with their foreign brethren. Our Science and Art Department in default of a by-some-sighed-for Minister of Fine Arts, should look to a point which before long public opinion will urge on its attention. Let us hope that their action when carried out will fully justify the belief of a possibility of "the young student being able to study the rudiments of his science without the necessity of going abroad," a belief entertained and expressed by an artist who may be said to owe almost the whole of his learning and the position he at present occupies to the education he has received abroad.

As bearing on the subject, we give in our present issue a view of the Gallery of Casts which has been founded in Vienna.

THE NEW EXAMINATION, AND WHAT IT INVOLVES.

AT the meeting of the Architectural Association, on the 25th ult., Mr. Aston Webb, President, in the chair, Professor T. Roger Smith read the following paper:—

The examination which all architects proposing to become Associates of the Institute will for the future have to pass comes into force this session, and this Association would hardly discharge the functions which have come to devolve upon it aright were it to take no notice of this circumstance. The step which has been taken in the establishing of this examination is one tending in the direction of measures which have at various times been warmly advocated by this Association. It is one which will largely affect our own members, inasmuch as we include in our ranks so large a proportion of the younger architects of London who are rising up into active practice. There is, therefore, every reason why we should devote an evening to the subject, and I am sincerely indebted to the committee for honouring me with an invitation to read a paper with reference to it.

There are few architectural matters which cannot be better understood by some reference to their history, than if you regard them simply as they present themselves at the present day. Though an examination which has never yet taken place cannot exactly boast of a history, still a little retrospect of the causes which led up to it may help us in understanding its scope. As far back as the oldest member present can remember, that is to say, in the days of Lyon's Inn Hall, the desirability of a diploma for architects, or at any rate of an examination, such as the members of several other learned and scientific professions have to pass, has been dwelt upon in this Association,—and the need of it has always been felt by a certain number of the members of the Institute. Eventually Professor Hayter Lewis, when he was secretary of the Institute, procured the appointment of a committee to consider this question and draw up a scheme for an entirely voluntary examination. The work of that committe was, a good deal of it, done by Mr. Arthur Ashpitel, Mr. John Papworth, Professor Lewis, and myself, and during part of our deliberations we had the co-operation of Professor Kerr. The Institute, as a body, I must confess, looked upon the scheme with coldness, perhaps with some jealousy, and to disarm this jealousy we were compelled to accept limitations which hampered it not a little. No kind of distinction or reward, not even a certificate, was to be gained by passing, no privilege, or grade, or title, was to be accorded to those who passed. The first examination took place in the year 1863, and it is melancholy to think that of those who conducted it, I am the only survivor. The examiners were Sir Gilbert Scott, Sir Digby Wyatt, and Mr. Arthur Ashpitel; the moderators, Mr. John W. Papworth and myself. The result was that eight candidates passed in the class of Proficiency, and in the following year seven, with the addition of two in the class of Distinction, for we had two classes to begin with, and altogether the honour of Distinction was gained by three candidates, all of them well-known members of this Association, Mr Phéné Spiers, Mr. R. R. Bayne, and Mr. T. H. Watson. As years went on this examination languished, mainly, I believe, because it led to nothing; and modifications were introduced with the idea of making it more attractive to students; the most important changes being the abolition of the Class of Distinction; the introduction of a Preliminary Examination; the division of the Proficiency Examination into two portions, which a candidate might take in different places; some modifications of the subjects of Examinations; and last, but not least, the grant of a certificate, and, under some limitations, of the title of Graduate of the Institute. These changes seemed to work well, and the results of the Voluntary Examinations, before and after this introduction, may be summarised as follows:—Ten Examinations have been held during eighteen years. Three students have passed in Distinction, forty-three in Proficiency, and fifty-two in the Preliminary Examination, making a total of ninety-eight successful candidates, whose names you will find in the Brown Book, and many of whom you will recognise as having been in other ways successful since. I must now take a glance into the past, and remind you that some years ago a committee was appointed, at the suggestion of Mr. Horace Jones, to consider what steps could be taken to advance the welfare of the Institute. That committee's report was not agreed to by the general body, mainly on the ground that it advocated the grant of a new charter, and a second committee, which was thereupon appointed, considered the matter afresh. Among the recommendations which it made, this committee reported that after a certain date all Associates of the Institute ought to pass an Examination. The various recommendations of this report were agreed to substantially as they stood, and the changes recommended were adopted. The Examination about to take place is one of those changes, many of which appear to have been of essential service to the Institute, and through it to the profession. I propose now to give you some idea of what we may suppose to be intended by the establishment of this examination, and of what the examination itself will embrace. We may safely put the intention of the Institute as being to render the Associateship of their body a guarantee that the Associate has proved his fitness to be entrusted with work, so far as that fitness can be ascertained by an examination. At present a man is admitted an Associate because nothing is known against him, and something has been said in his favour; but it is not incumbent on him, and, indeed, would not be very possible for him, to prove to the satisfaction of the Council who receive his nomination, or of the general body who elect him, that he is properly qualified; and, accordingly, though Associateship of the Institute has a very considerable value, it is not at all so serviceable to those who have obtained it in the way of giving them standing in

the eyes of the public, as it might be, and as we may hope that in a few years it will be. This being so, the course of examination must be taken as embodying a kind of standard of the qualifications of an architect, and, as such, is a document of no small interest. The draft of it was prepared with great pains and care by a committee on which several members of the Association had seats; it was finally brought to its present shape by the Council of the Institute, and it was passed by the general body, so that among the matters which are involved in the Examination, we may fairly take this authoritative publication of an architectural standard of qualifications as the fairest. A competent architect, then, must be able to design and draw out a building complete, including perspective, details, and ornament, and he must be able to plan and work out a scheme for appropriating a given site to a special purpose. He must be able to write a specification and prepare an estimate. He must also know something of the conditions usually appended to contracts. As far as construction goes, he must be familiar with building materials and how to use them, and calculate the strains upon them. He must know how to drain his buildings, and should have some knowledge of what to do in case of failure and accident. Lastly, as regards art, he should have a general knowledge of the history of our art, and be tolerably familiar with one small portion of that history, and he should possess sufficient acquaintance with the mouldings, features, and ornaments of some one style to be able to use them with correctness in his designs, and to draw them from memory. I do not think that less than this can reasonably be expected of architects who begin practice, in the interests of the public and the profession alike; and should the examination be so conducted as to bring these qualifications to a fair test, the architectural profession cannot fail to reap great benefit. I have recently, before a different audience, given some account of the actual course of examination as proposed in the Institute's programme, and as that must be done here also, you will, I dare say, pardon me if here and there I quote a phrase from the opening lecture of the courses at the University College, the lectures just referred to; though I may as well say at once that I propose to review the course of examination here at much greater length than was requisite in that lecture. The obligatory preliminary work consists of a set of plans with a perspective drawing, a sheet of details, and an ornament. This requirement is, of course, intended to elicit practical skill in architecture generally, and in handling drawing materials and making drawings. Work done as a student,—such, for example, as sketches from ancient buildings, notes, or essays,—may be also submitted at the option of a candidate. This affords an excellent opportunity for a student who has really made studies to show them; and though it does not appear that marks are directly allotted to the preliminary work, there can hardly be a doubt that good preliminary work will tell in a student's favour; for example, it will be likely to induce the examiner to turn the *viva voce* examination into a direction towards which his preliminary studies have pointed. The first subject for examination is the History of Architecture, taking a general view of a wide field and an examination in some detail of a single division of the subject. It is a matter for congratulation that history is thus required, for its value is, I believe, very much underrated. To a certain extent a knowledge of the history of architecture is part of the education of an architect, as distinguished from his mere instruction; and it is a characteristic of the present day that few students, especially young ones, will tolerate any subject of tuition which is to be pursued solely for the purpose of training, expanding, and informing their minds. They want something that will pay. Now that the history of architecture will pay to the extent of 100 marks out of the 600 obtainable, I hope many will give some attention to it, and will, to that extent, get educated in spite of themselves. The answers to this paper are to be illustrated by sketches, and no doubt the judges will be much influenced by really good sketches. The second subject of examination is one intended to show that the student has mastered some one style sufficiently to give him a command over its forms and features,—knows it, in fact, so that he could use it on a building without committing gross errors. This subject is largely a test of practice and drawing, and private study, but there is nothing in which the junior class of design could be more serviceable than in giving the members some idea of what is meant by an accurate use of some one style; though, of course, in preparing for examination, careful private study will be required in addition to attendance at that class. The best preparation by far is measuring, sketching, and drawing out some existing example or examples of the style selected. Even a modern example from the hand of a good architect would be a more instructive study than a book or an engraving. To this subject seventy-five marks are allotted. The third division is Materials and Construction, with Sanitary Science, and I need hardly add, I hope, that practical as well as theoretical acquaintance with these subjects will be necessary, in order to satisfy practical examiners, and must be sought on the works to which the student has access. This group of practical subjects, to which two papers will be devoted, engrosses one-third of the marks, and occupies one-third of the time which is allotted to paper work. It is, therefore, manifestly the most important of the whole, and one in which I venture to think the examiners will be disposed to be more strict than in other cases when marking other papers. The principal building materials can be understood best by those who have experience of their use, and have ripened and extended that experience by reading books, attending classes, making inquiries for themselves, examining, and, when possible, collecting specimens, and witnessing experiments when testing is going forward. "The principles of construction as applied" are words in the programme which seem to cover the theory and practice of building, and the student will have to pursue both. Drainage and sanitary requirements are also named. In this we are all in the position of new brooms, and probably a manifest want of familiarity with the modern ways of executing what is called sanitary plumbing and drainage would induce the examiners to make a clean sweep of the candidate's chances. The application of formulæ will, in all probability, not be pushed far, but it is very desirable that what is done should be right. As there is no preliminary examination, and no subject that is not a strictly professional subject is taken up, the examiners may possibly afford an opportunity for those candidates who are good mathematicians to show their skill by including two or three difficult questions. No doubt, the moderately-trained man will be wise enough to let those questions alone if such are set; and the mathematicians will be heartily glad of them. Considering the heavy risks that attend the failure or fall of buildings, it is a very good thing that this curriculum includes what I may call their pathology. This the aspirant to Associateship cannot learn from any books that I know of; but only from seeing buildings that are dangerous and watching how they are dealt with. It is very desirable to get some notion of how foundations fail, how brickwork fails, how timber breaks or shrinks, or rots, and now masonry yields; and perhaps there is no place which affords more opportunities for the study of these things in old buildings and new than poor leasehold London, founded on clay, run up in haste, with indifferent materials, and too often no professional supervision beyond that of the district surveyor, and no specification save the Building Act. The fourth subject is Planning for a special purpose; it is one more calculated than some of the others to show what the candidate is fitted by nature and training to practise as an architect. No preparation for this paper will be better than making designs in one of our two Classes of Design; but the various opportunities offered by public competitions, by the prizes given in some of the professional journals, and by competing for the Institute prize, and those of this Association, each and all offer good occasions for drawing out and stimulating powers of design. No man is a born planner, and practice is as necessary in this as in any other of the curriculum, perhaps more so. To this subject 75 marks out of 600 are allotted. The fifth subject is writing specifications and estimating, and here a candidate can make 125 marks, though, as the time allowed is rather disproportionately short, he will probably be unable to do as much as he would like in the way of answering questions. My own impression is that specifications will be more thought of than estimating, and, indeed, the questions are described so as to lead one to expect that only a general acquaintance with how to estimate will be required, while an actual bit of specifying has to be done,—and should be well done. The last subject is so much of professional practice as is involved in the general conditions usually appended to a contract. Of course, this must be interpreted as meaning not merely familiarity with the usual clauses, but with the purposes which each is meant to serve, and the dangers and disappointments which each is intended to avert. It does not seem that great stress will be laid on this subject, important though it be, as only 25 marks are allotted to it. The work thus far is done by means of written or drawn answers to printed questions,—*i.e.*, is paper-work only, and it takes up three days,—Tuesday, Wednesday, and Thursday,—the candidates having six and a half hours' work on each day. The examiners, meantime, will give such consideration as they can in the time to the work of each student taken as a whole, with the addition of his preliminary work, and will so prepare themselves for the *viva voce* examination. This, though no doubt actually very formidable to some young men, should really be regarded as a most valuable feature of the scheme. The candidate who has really done something wrong,—as, for example, one who had attempted to send as preliminary work something drawn by another hand (if any one ever was mean enough to try that) might expect to have a bad time of it, as the inconsistency between his preliminary work and his answers would probably have appeared, and he would be pushed hard, and deservedly; but to no student who has honestly prepared himself, and tried to do his best, can the oral examination be other than an advantage. It must not be forgotten that, at any rate in the early examinations, the desire of the Examining Board will be likely to be much more to let men in than to keep them out; and in scanning the work of a doubtful candidate, there will be sure to be a disposition to try to find out the points where he is strong, and give him opportunities of answering some questions about them, than to push him too hard where he has shown signs of weakness. I beg strongly to commend this view to intending candidates who are fairly prepared, and to advise them to look upon the oral examination as their best friend, and not as diminishing their chances of success. The examiners sitting round the table will certainly not desire to admit the unworthy, but I am very sure they will do their best to discover and bring out the worth of the worthy. Finally, the examiners will have to adjudge marks to the work done. The system they will pursue is of course, for themselves to determine, but it will, no doubt, be a uniform one. They will, in all probability, give no marks at all to paragraphs full of irrelevant information, which the student had in his head or had committed to memory, but which are not answers to the questions. On the other hand, correct, exact replies, just to the point, even if brief, will be sure to be marked high. Illustrative sketches, if well done, ought to command good marks; and any answer, be it drawing or be it writing, that is thoroughly right and thoroughly complete, no doubt, will earn all the marks it will deserve. On most systems of marking it would be possible for thoroughly correct answers to all the questions to obtain more than the maximum number. On the least favourable plan, the full maximum must be possible. The limit which a candidate must obtain, in order to pass, is one-half this number, gained not necessarily in each subject, but as the candidate best can; and any moderately good set of answers ought to reach this. If the half is very nearly approached, though not reached, it is to be presumed that the examiners will recur to any memorandum they may have kept of the oral examination, and will re-examine the preliminary work, in order to see if they can fairly increase the number of marks in any subject; and if, after this reconsideration, which I know will be done with a disposition to look into the candidate's merits fairly, and perhaps favourably rather than harshly, the examiners feel bound to reject a candidate, he may be pretty sure that he has not yet properly prepared himself for practice, and that by continuing his studies he will be doing nothing more than that which it is necessary should be done in order that he may, with safety both to himself and to those who may employ him, practise as an architect. Perhaps it is right that I should add that owing to my position at University College, I am, fortunately for myself, not eligible to serve as an examiner, and that in what I have just said I must not be understood as pledging any of the examiners to any special course, but only as speaking from some

experience in the voluntary and other examinations, and from an intimate knowledge of the circumstances.*

THE INTERNATIONAL EXHIBITION OF SMOKE-PREVENTING APPLIANCES.

THE international exhibition of smoke-preventing and fuel-economising appliances, instituted by the Smoke Abatement Committee of the National Health and Kyrle Societies, was formally opened by the Lord Mayor on Wednesday. The exhibition is arranged (by permission of the Commissioners for the Exhibition of 1851, and with the concurrence of the Committee of Council on Education, and the Council of the Royal Horticultural Society) in the east and west arcades and in the quadrants connecting those arcades with the conservatory in the rear of the Royal Albert Hall, Kensington. The catalogue (which, so far as we have tested it, seems to have been carefully compiled) contains a great deal of introductory matter explaining the origin of the Committee under whose auspices the Exhibition has been formed. A useful report on the law affecting smoke is given, and various important meetings held in support of the exhibition are reported very fully. Some of the speakers at those meetings occupy the first rank as men of science, and their speeches,—notably that of Dr. Siemens,—contain much that is valuable and suggestive with regard to what is undoubtedly one of the most important of the many sanitary and economical problems of the day. It has been arranged by the committee that the various appliances and fuels exhibited both for domestic and industrial purposes shall be properly tested for heating power, cost, convenience, quality of combustion, and comparative freedom from smoke and noxious vapours; and to this end they have secured the services of Mr. D. Kinnear Clark, M. Inst. C.E., to superintend the trials, under the direction of the executive committee. Professor W. Chandler Roberts, F.R.S., has undertaken the chemical testing in connexion with the trials of fuel, grates, and stoves. The award of medals on these occasions is often so delusive that we shall look with some curiosity to the result on the present occasion. The exhibition is primarily divided into two classes of appliances, applicable respectively to domestic and to industrial purposes. Objects exhibited in Sections A, B, and C are entirely for domestic, and those in Section D for industrial, use. Section E is reserved for various fuels suitable for either domestic or industrial purposes, or both, and Section F for foreign exhibits of all classes. A plan accompanies the catalogue, and on it the space occupied by the exhibition is divided into blocks or sections numbered I. to XXVII. Boards bearing these Roman numerals are fixed up at intervals to mark these divisions or blocks. Block I. is situate at the south end of the western arcade, and thence the blocks are continued northward into the west quadrant, at the eastern end of which, abutting on the conservatory, is Block XIII. Block XIV. is at the other or eastern end of the conservatory, *i.e.*, at the western end of the east quadrant, and from this point the blocks continue southward until the final one, XXVII., is reached at the extreme south end of the eastern arcade. The stands or stalls, of which there are several in nearly every block, are not separately numbered, but are referred to in the catalogue as being in such and such a block. In the following outline of the contents of the exhibition we will, for the sake of convenience, assume that the visitor will traverse the exhibition from the south-west corner (beginning with Block I.) to the south-east corner (ending with Block XXVII.).

Block I. at the time of our visit was almost destitute of exhibits. Those that were there were not labelled with their exhibitors' names, nor could we find anything catalogued in Block I.

Block II.—Here Messrs. George Green & Sons, of Aberystwith (represented by Messrs. Duncan Bros., of Queen Victoria-street), show a vertical boiler fitted with Green's patent water-hearth, which consists of a shallow box made of boiler-plates, through which the water of the boiler circulates. This box takes the place of furnace-bars, and renders them unnecessary, the upper and lower plates being perforated and connected together with screwed conical tubes of sufficiently large area to allow the ashes to fall through. Messrs. James Newton & Son, of Oldham, exhibit Newton's patent mechanical stoker and fuel economiser, in which the coal, after passing from the hoppers through crushing-rollers, is injected into the furnace by blasts of heated air. The Chadderton Ironworks Company, Manchester (represented by McDougall Bros.) are exhibitors of McDougall's patent mechanical stoker, in which the fire-bars are actuated by what is described as "an eccentricated shaft" of Bessemer steel. The eccentrics are turned on three different centres, and are alternately arranged, each bar resting on and being driven by its own eccentric or cam.

Block III.—Messrs. T. & T. Vicars, of Seel-street, Liverpool, show their patent "self-stoking smokeless furnace," for steam-boilers, &c. In action, a large hopper is filled with fuel, which is fed from thence by plungers, in suitable quantities, on to the bars, where it is coked, and, by their motion, carried backward on to the grated plate. The ends of the bars act as plungers, and break up the large pieces of coked fuel into pieces of a size favourable to active combustion, at the same time forcing it into the flue, where the combustion is completed. The Patent Steam Boiler Company, Birmingham, have on view Knap's mechanical stoking and smoke-consuming apparatus, which consists of a hopper into which the fuel is charged; a slide by which the supply may be at any time cut off; and a crusher-spindle, which revolves very slowly, and carries down the fuel to a reciprocating bar, which feeds the fuel forward through a horizontal shoot. The same company are exhibitors of Root's patent safety steam boiler, which consists of a series of interchangeable tubes of lap-welded wrought-iron. These tubes contain the water and steam. The hot gases and flame from the furnace are thoroughly broken up, on account of the zigzag arrangement of the tubes, which also, being inclined, cause the steam as produced to be collected at the upper ends, and thence to pass through the patent connexions into the steam chamber. Messrs. Knowles & Halstead, of Bradford, show their patent helix furnace-feeder. The helices or screws are made to carry the fuel under the bars and up into the fire at its under side, so as to insure perfect combustion of coal. Mr. James Proctor, of Burnley, shows his patent mechanical stoker and movable fire-bars. Henderson's patent mechanical stoker and patent self-cleaning furnace combined is shown by Messrs. Piercy & Co., of Birmingham. In this appliance, the clinker, instead of being raked out of the furnace in the usual way, by hand, is carried automatically to the back of the grate-bars, and remains there till it is cool, when it is removed without necessitating the opening of the furnace-doors. Mr. Thomas Henderson, of Liverpool, exhibits his patent furnace-front and fire-door for the prevention of smoke in connexion with steam boilers generally, and for the reduction of temperature in the stoke-holes of steamships. Mr. John Collinge, of Oldham, exhibits Blocksage's patent smoke-consumer and fuel economiser, for the steam boilers of stationary, marine, and locomotive engines. It consists of an inclined oven of the length and breadth of the ordinary grate-bars, placed in front of the boiler, and fired by hand. The top and sides of this oven are lined with fireclay blocks, which acquire such an intense heat that the smoke, impinging against them, is consumed. Mr. Collinge also shows some patent fire-backs for domestic stoves, grates, and ranges.

Block IV.—Live's Boiler and Furnace Company (Limited) are exhibitors of boilers, flues, furnaces, grates, &c., constructed and fitted under their patents. Messrs. Roeser & Russell, a firm well known to our readers, are exhibitors of smoke-preventing doors and bridges, and movable fire-bars, applicable to furnaces for industrial use. Messrs. George Haller & Co., of Lime-street, show Kohlhofer's patent fire-bars and furnace-grates, by the use of which small coal or poor fuel of any kind may be profitably utilised. It is stated that the bars remain cold whilst in use, and that the clinkers do not stick to them. Mr. E. Renton Gibbs, of Liverpool, shows his hot-water heating apparatus, which is favourably spoken of by many architects and others who have used it. We have noticed it on previous occasions. Mr. Josiah Hampton, of Loughborough, exhibits fuel-economising and smoke-consuming fire-bridges for boiler-furnaces, made of cast iron, and having perforations through which air passes to the black smoke and unconsumed gases at the proper point, thus assisting in their perfect combustion.

Block V.—Messrs. J. & J. McMillan, of Port Dundas, Glasgow, are exhibitors of under-grate fuel-feeding apparatus, applicable to boiler furnaces of all kinds. The charges of coal or other fuel are contained in travelling boxes actuated by mechanism. The principle of the invention is applicable, and is shown applied in another part of the exhibition, to domestic stoves and ranges. M. Michel Perret, of Paris, exhibits a grate (*grille immergée*) for boiler and other furnaces, the bars being deep in section and having their lower edges immersed in water. M. Perret's multiple-stage furnace, for heating churches and other large buildings by means of hot air, is shown in action, and appears to be effective. It will burn the poorest descriptions of refuse fuel. We understand that it has been largely used in France during the last four years. The same exhibitor also shows a radiating open fire-grate. Messrs. George Hopewell & Co., of Topsham, Devon, show their patent wrought-iron reversible fire-bars. Mr. T. W. Williams, of Swansea, exhibits a patent oxy-hydrogen furnace for the consumption of anthracite and other smokeless coals without injury to the furnace bars. Mr. M. Holroyd Smith, Halifax, shows some hexagon fire-bars and a model of a helical furnace feeder. Messrs. Geo. Waller & Co., of Southwark, show Smith's patent mechanical stoker and smoke-preventer, for Cornish and other boilers. The Wavish Fuel Economiser Company show a model of a Cornish boiler fitted with Wavish's patent economiser and smoke-consumer; also these appliances adapted to domestic grates. Messrs. W. & S. Deards, of Harlow, exhibit coil and other boilers for heating green-houses, baths, &c. Messrs. G. Hunter & Co., Leeds, are exhibitors of a patent apparatus for smoke-consuming in Cornish, marine, and other boilers. Mr. John Tenwick, Grantham, exhibits patent fire-bars and a smoke-preventing furnace-door.

Block VI.—Messrs. W. A. Martin & Co., of Southwark, show their smoke-preventing doors and furnace-grates, which have been largely used. Mr. C. B. Gregory, of Beverly, New Jersey, U.S.A., exhibits a smoke-burning furnace which he claims to be adapted to all practical purposes, industrial and domestic, and capable of burning all kinds of fuel and refuse matter without smoke. It is portable. The Great Britain Smoke-Consuming and Fuel-saving Company are exhibitors of Orvis's patent appliances. Mr. A. C. Engert, Bromley-by-Bow, shows his patent coking-boxes for the prevention of smoke as applied to steam boiler furnaces. Messrs. Fraser & Fraser, of Bromley-by-Bow, exhibit a Cornish boiler.

Blocks VII. *and* VIII. are chiefly taken up with a large number of exhibits of anthracite and other smokeless coals, besides charcoal, coke, and other fuels. In Block VIII. Mr. George Sinclair, of Leith, shows his patent self-acting mechanical stoker.

In *Block* IX. Messrs. S. Leoni & Co., of the Strand, are exhibitors of gas kitcheners, gas fires, coke and gas fires, hot-air stoves, and grillers and other appliances for cooking by gas.

Block X.—Messrs. Steel & Garland, of Sheffield, show their excellent "Wharncliffe" grate and coal-economiser, the "Kensington" patent smoke-consuming grate (Redmayne's patent), and their patent "Pillar" smoke-consuming hot-air stove. All these specialities will well repay examination. Messrs. Portway & Son, Halstead, are exhibitors of the "Tortoise" slow-combustion heating and laundry stoves. Messrs. W. A. Martin & Co., Southwark, show domestic fire-grates, provided with movable sides to facilitate the combustion of the fuel, which is put on only at the sides in spaces obtained by the propulsion and withdrawal of the movable cheeks. The Eagle Range Company, Fleet-street, are exhibitors of ranges fitted with smoke-consumer and fuel-economiser. Messrs. W. Poore & Co., Cheapside, are exhibitors of American cooking and heating stoves.

Block XI.—Mr. R. W. Crosthwaite, Stockton-on-Tees, shows Armstead's patent hot-air stoves, "Olibanus" cylinders for heating coppers, and Crosthwaite's "Combination" range. Mr. Henry Thompson, Islington, shows his patent grate and apparatus for feeding it with fuel at the bottom of the fire, so as to prevent smoke. Mr. James Smith, Liverpool, shows an open smokeless grate in which the leading feature is that the ash-pit is provided with a close-fitting cover (which can be moved for removal of ashes), and is connected with a pipe or passage

* To be continued.

provided with a damper to control the supply of air. Messrs. J. & J. McMillan here show their under-grate coaling apparatus, as applied to open grates and cooking-ranges.

Block XII.—Messrs. Musgrave & Co., of Belfast, have a large display of their patent ventilating slow-combustion stoves and air-warmers, for burning either coke or anthracite, in which a recently-patented system of air-jets is used to assist in the consumption of the smoke and gases. This well-known firm's "Ulster" smokeless stove-grate is very similar in appearance to a well-designed register-stove grate, but it is provided with a chamber for holding fresh fuel, which replenishes the fire as it burns away, but cannot become ignited until it reaches its proper position in the fireplace. One or two important improvements have lately been made in this grate, which, in its present form, is very well worthy of the attention of visitors. Mr. G. A. Spencer, of Southwark, exhibits an arrangement for feeding stoves and open grates in such a manner that the fresh fuel is introduced below the fire. The Coalbrookdale Company exhibit some fireplaces and cast-iron chimney-pieces and over-mantels in the Adam, Chippendale, and other styles, shown in conjunction with the "Kyrle" and other smokeless grates. The exhibits are distinguished by excellence of workmanship, and fully maintain the reputation of the company. Mr. E. R. Hollands, Newington-Green, shows his patent smoke-preventing fire-grate, in which the fresh fuel is inserted at the bottom of the fire.

Block XIII.—Mr. John M. Stanley, of Rhyl, shows cooking-range, kitchener, room-grate, and baker's oven, in which, by a patented arrangement of outlet flues he claims that the volatile gases are induced by the natural draught of the chimney to pass downward through the fire, and so smoke is prevented. Messrs. M. Feetham & Co., of Clifford-street, are exhibitors of grates, stoves, and kitchen-ranges. The Wilson Engineering Company, Holborn, show [their portable kitchen-ranges and stoves, for which they claim the merit of being almost perfectly smokeless.

Block XIV., which is at the west end of the eastern quadrant, adjoining the east end of the conservatory, is wholly occupied by Messrs. Doulton & Co.'s excellent display of tile and other stoves. This firm's slow-combustion radiating tile stoves have on previous occasions been noticed by us. They have come largely into favour, as they deserve to do from their cleanliness, cheerfulness, and efficiency, coupled with economy of fuel. They are thickly lined internally with fire-clay, and will burn for twelve hours or more without needing attention. A large tile stove suitable for use in public buildings is shown. In addition to the internal furnace provided in the smaller tile stoves, it is provided with an open fire-place, which can be used either alone or concurrently with the internal fire. Messrs. Doulton are also exhibitors of ornamental Doulton-ware vases or shafts for use in ventilating on the so-called "Tobin" principle. Their syphon-flue stove is another speciality well worthy of the attention of visitors to the Exhibition.

Block XV.—Mr. William Stobbs, Pimlico, exhibits two American productions, viz., Janes & Kirtland's "Beebe" kitchen-range, for which great things are claimed. The various castings of which it is built up are certainly specimens of finished workmanship. Mr. Stobbs's other exhibit is the Barstow Stove Company's "Crystal" fireplace heater, to burn coke or anthracite coal. It can be fitted to warm rooms above the one in which it may be fixed. Messrs. Newton, Chambers, & Co., of the Thorncliffe Ironworks, near Sheffield, exhibit their "Thorncliffe" improved close and open-fire cooking-range. Messrs. Yates, Haywood, & Co. (Limited) are exhibitors of slow-combustion and other stoves. Dr. Joseph Moore, of Thornton Heath, exhibits an open fire-grate, for use either with anthracite or bituminous coal. It is also constructed with the intention of preventing draughts in a room by precluding more air ascending the flue than is necessary for proper ventilation of the apartment. Messrs. Charles Churchill & Co., Finsbury, show the American "Greene" soft coal cooking-stoves and heating-stoves. Mr. Harry Hunt, Stoke Newington, shows the "Crown Jewel" base-burner anthracite coal-stove, which has previously been described by us.

Block XVI.—Mr. Herbert Lea, Warwick-street, Regent-street, exhibits the "Sunderland" stove. The "smoke-abater" coal-shovel, exhibited by the patentee, Mr. W. S. Melville, of Bow, is an ingenious though simple contrivance for quickly and easily feeding a fire with fresh fuel at the bottom of the grate. Messrs. Clark, Bunnett, & Co., Limited, Rathbone-place, exhibit Ingram's "Kaio Kapnos" fire-gate and kitchen ranges, constructed to burn coke, ordinary house-coal, and anthracite. These grates (which are the invention, we believe, of an architect) are stated to consume their own smoke, and can also be used as slow-combustion grates. The Radiator Range Company show their range and a fire-grate, in which the fire-box is brought forward from the back of the stove. Mr. John Cornforth, of Berners-street, is an exhibitor of open fire-grates designed to consume smoke.

Block XVII.—Messrs. Frederick Edwards & Son, of Great Marlborough-street, exhibit their new smoke-consuming slow-combustion grates, the invention of Mr. Edwards, jun., who is well known to many of our readers as a writer on warming and ventilation. In this grate a body of coals sufficient for a day or a night's consumption is put into the fire-basket or chamber, and upon the top of this mass a fire is made and the coal is allowed to burn gradually downwards. A blind or screen, supported by chains and balance-weights, is moved down by degrees in front of the body of burning fuel. For kitcheners, Messrs. Edwards exhibit drawings modifying Count Rumford's principles. Messrs. Barnard, Bishop, & Barnards, of Norwich, have a large and good display of well-designed stoves, kitcheners, and ranges, for slow combustion and otherwise, all constructed for burning anthracite and other smokeless coals. Among the specialities shown by this well-known firm are,—Everitt & Barnard's patent grate; Bartlett's patent grate; the "Anthracite Grate"; and Everitt & Barnard's slow-combustion, smoke-consuming fire-grate, the "Glow." These are all worthy of careful attention.

Block XVIII.—Messrs. Thomson, Sterne, & Co. (Limited), show Clerk's patent gas-engine. Some anthracite stoves shown in this block are exhibited by the patentee, Herr Franz Lönholdt, architect, Frankfort-on-the-Main.

Block XIX.—Messrs. Archibald Smith & Stevens, of Leicester-square, exhibit Russell's patent "Wonderful" self-feeding grates for burning anthracite and bituminous coal, coke, and cinders. This stove, which has been previously described in detail in our columns, is sure to attract the attention of visitors. The British Sanitary Company, Glasgow, show their patent ventilating stove-grate and gaselier canopy. The stove-grate is formed as an enclosed chamber with a glass door and panels. A portable grate, which holds the fire, stands within this chamber. As we understand it, the canopy over the gaselier, when placed in communication with the stove-chamber, is intended to draw off the vitiated air caused by the combustion of the gas. Mr. William Lawrence, of St. Mary Axe, exhibits a variety of stoves for domestic purposes. Mr. G. J. Cox, of the Maidstone Gasworks, exhibits a number of newly-patented inventions for heating and cooking by gas, and he also shows Captain T. S. Clarke's patent smoke-consuming hot-air ventilating grate. Mr. A. C. Engert shows his coking-box for the prevention of smoke fitted to an ordinary fire-grate. The Derwent Foundry Company, Derby, show smoke-burning register-grates and a smoke-burning gill stove.

Block XX.—Messrs. Thomas Potter & Sons, of Oxford-street, show the patent smoke-consuming revolving fire-grate, the invention of Mr. H. Saxon Snell, architect. It is simple in action, the fire-box or cage being made to revolve upon a pivot, so that when the fire-box is reversed, fresh fuel can be introduced through a hinged grating on its under side, and this fresh fuel is, by the inversion of the the grate, brought undermost. The "Thermhydric" ventilating hot-water open fire-grate, also the invention of the same gentleman, is among the other exhibits of Messrs. Potter & Sons. It is being largely used, with, we are informed, very satisfactory results. Mr. Samuel Rigby, of Blackpool, exhibits smoke-preventing apparatus, which he claims to be applicable to all open coal-fire grates for domestic use. Mr. J. Russell, of Neath, shows a patent flue or blower designed to remedy smoky fire-places. Mr. Henry E. Hoole, Sheffield, shows a radiating and reflecting grate for burning bituminous coal without smoke, and an "interchangeable" grate for burning bituminous or anthracite coal. Messrs. A. Boyd & Son, New Bond-street, show a ventilating warm-air grate for domestic use, in which the iron body, which is lined with fire-clay, is made zigzag to increase the heating-surface. Messrs. Smith & Wellstood, of Ludgate-circus, show anthracite coal and coke burning stoves. Mr. William White, F.S.A., of Wimpole-street, is one of several architects who are exhibitors. Mr. White has here, as in previous exhibitions and in connexion with other subjects, shown that he is capable of uniting practice with theory. His "Shrewsbury" warming-apparatus, and the "Shrewsbury" open-grate radiator and air-warmer, here shown, will be examined with interest. Economy of heat and fuel, and certainty and continuity of action for a great many hours without attention, are among the merits claimed for these appliances.

Block XXI.—Messrs. Brown & Green, of Luton and Bishopsgate-street, are exhibitors of smoke-consuming kitcheners for bituminous coal, and register stoves for anthracite coal. Among their specialities well worth attention are the "Kensington" and "Luton" register stoves. Messrs. J. F. Farwig & Co., of Queen-street, show George's slow-combustion "Calorigen," to burn anthracite or coke. Mr. Robert H. Griffin, of Guilford-street, exhibits his patent ventilating, heating, and smoke-consuming register stove or open fire-grate, of which we have spoken before.

Block XXII.—Mr. Francis Hammond, of Chandos-street, exhibits a hall stove fitted with smokeless fire on Dr. Siemens's principle. Messrs. Deane & Co., King William-street, show Fletcher's patent gas-cooking and heating apparatus, and Crane's patent register grate for burning anthracite, which we described not long ago. The Silber Light Company have a variety of stoves for paraffin and gas.

Block XXIII.—Messrs. Waddell & Main, of Glasgow, show Dr. Siemens's gas and coke fire-grate. There is a hot-air chamber underneath the grate which heats air to between 600° and 700° before it impinges on the gas-jets in front of the grate, performing, in fact, the function of a miniature hot blast. Messrs. James Slater & Co., of Holborn, are exhibitors of steam and gas cooking apparatus. Messrs. George Haller & Co., of Lime-street, show Kohlhofer's hot-air gas-stoves, and Messrs. Ritchie & Co., of St. Swithin's-lane, their "Lux Calor" ventilating stoves. Messrs. Strode & Co., of Cockspur-street, show Schönheyder's patent sanitary stove, containing some recent improvements for heating, lighting, and ventilating, and a great variety of gas fires, stoves, and lighting apparatus, for the excellence of which this firm's name is a synonym. Messrs. Ewart & Son, of Euston-road, exhibit the "Empress" smoke-cure, the "Amethysta" stove, the "New Crown" boiler, ventilating gas-stoves, &c. The catalogue assigns them a position in this Block, but when we saw them they were in Block VII., near the north end of the western arcade.

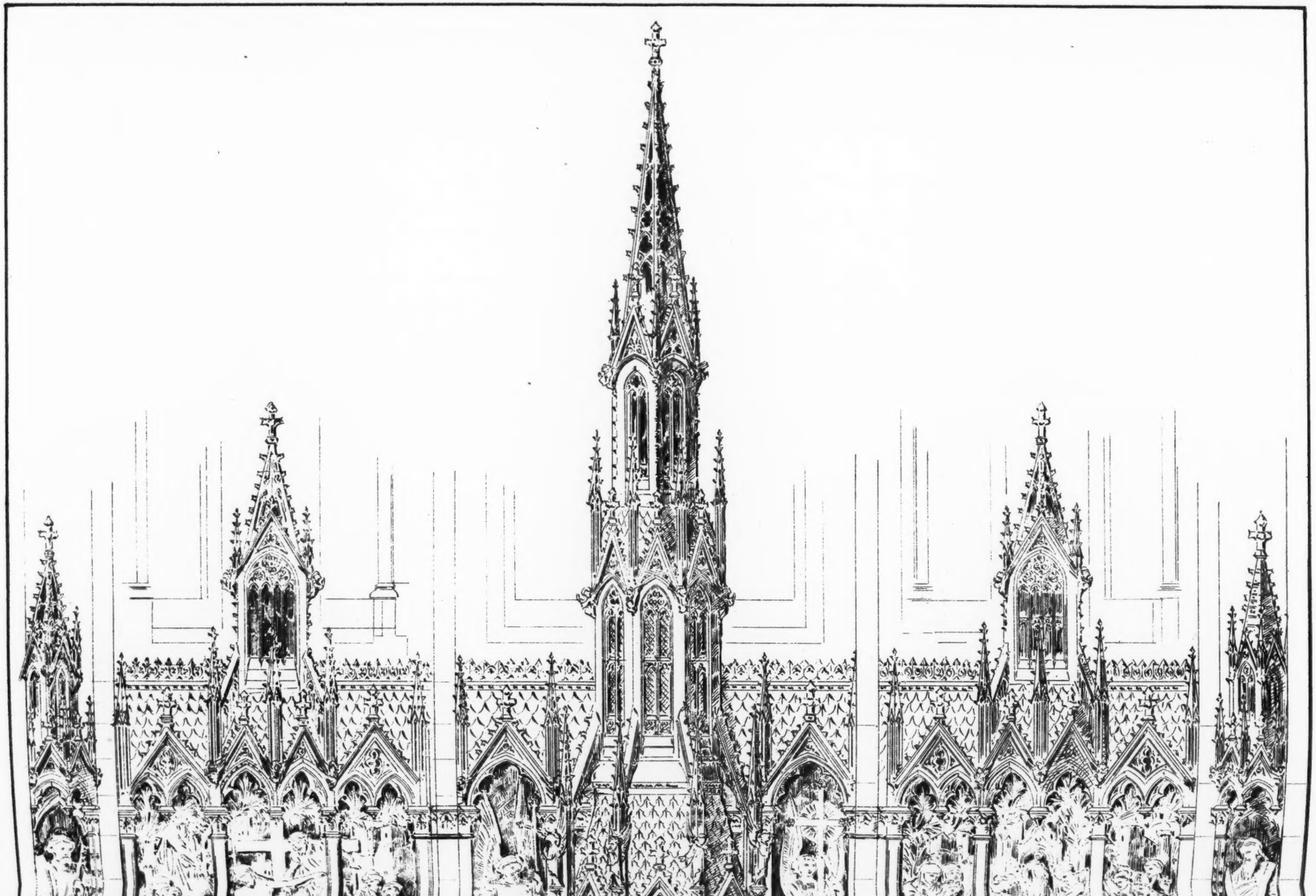
Block XXIV.—Messrs. J. C. Stark & Co., Torquay, show Stark's patent pure-air ventilating stove, and gas-heating and ventilating stoves. Messrs. John Wright & Co., of Birmingham, are also exhibitors of apparatus for cooking and heating by gas. Messrs. Lewis & Lewis, of Cambridge Heath-road, show a newly-invented gas-engine for small power. The executors of the late Mr. J. E. H. Andrew, of Stockport, show a two-man power "Bisschop" gas-engine. Messrs. Crossley Brothers, Limited show a 2-horse power "Otto" silent gas engine, intended to work with ordinary coal-gas, but here worked with the "Dowson Economic Gas."

Block XXV.—Messrs. George Wright & Co., of Rotherham and Queen Victoria-street, show their patent "Bi-valve" open fire-grates, fitted with, or adapted for, Dr. Siemens's gas and coke apparatus, securing economy of fuel and prevention of smoke without sacrificing the cheerful appearance of an open English fire-place. The same firm are exhibitors of their "Economic Cooker" (previously noticed by us with commendation) and of warm-air stoves. Their exhibit is a good one. The Dowson Economic Gas Company, whose product has already been mentioned, show their gas-producing apparatus at work.

Block XXVI.—Mr. C. R. Stevens, of Lewisham, shows a steam and hot-air heater and a circulating hot-water apparatus. These appliances appear to give good results with a comparatively small consumption of gas, which is the fuel used. Messrs. W. Sugg & Co., of Westminster, show their specialities in the way of gas fittings and burners. Referring to gas-

GALLERY OF CASTS: ACADEMY

ADEMY OF THE PLASTIC ARTS, VIENNA.



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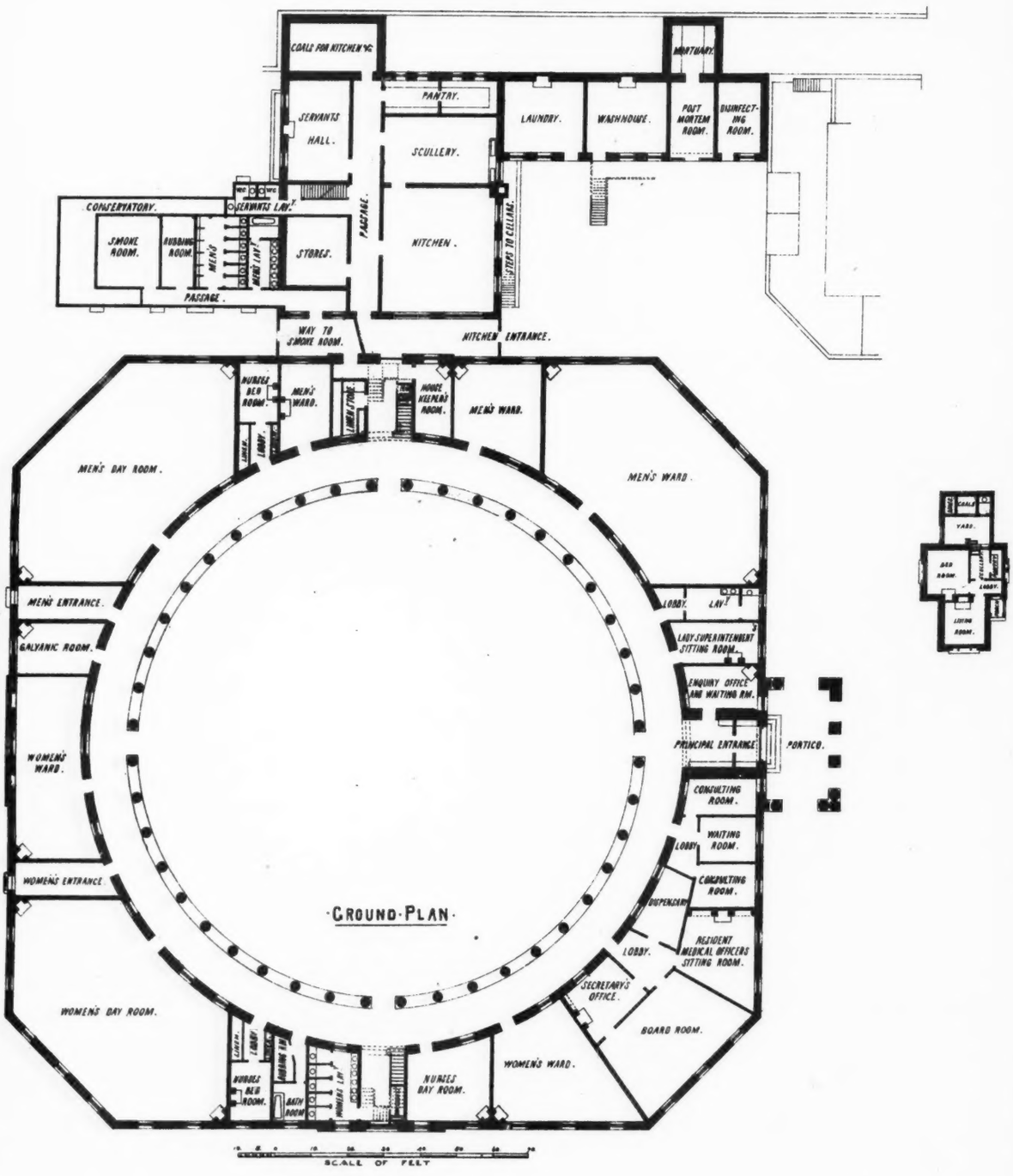
PROPOSED ALTAR AND REREDOS: R. C. CHURCH OF THE HOLY CROSS, LIVERPOOL.——MESSRS. PUGIN & PUGIN, ARCHITECTS.

ELEVATION TOWARDS DEVONSHIRE ROAD



GROUND PLAN

Whiteman & Bass, Photo-Litho

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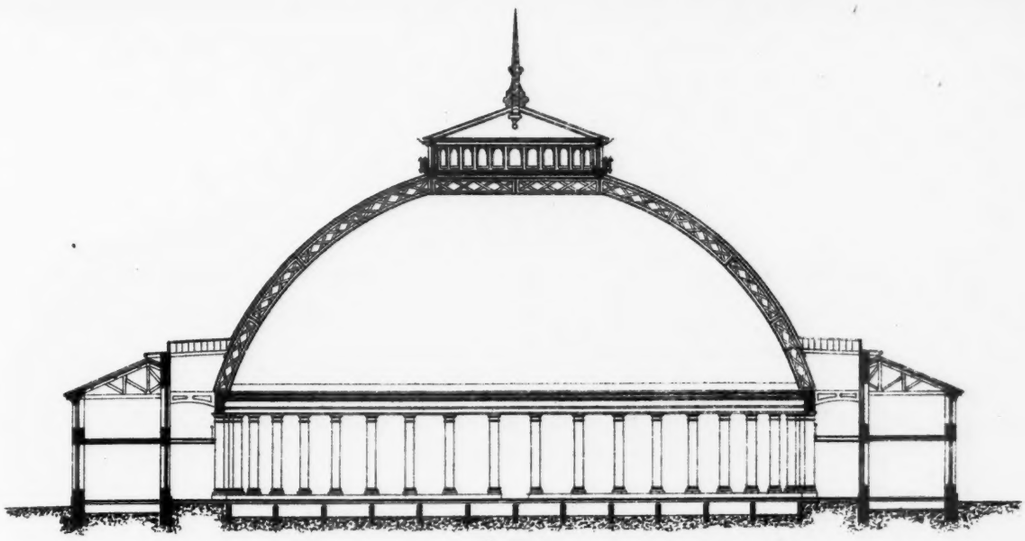
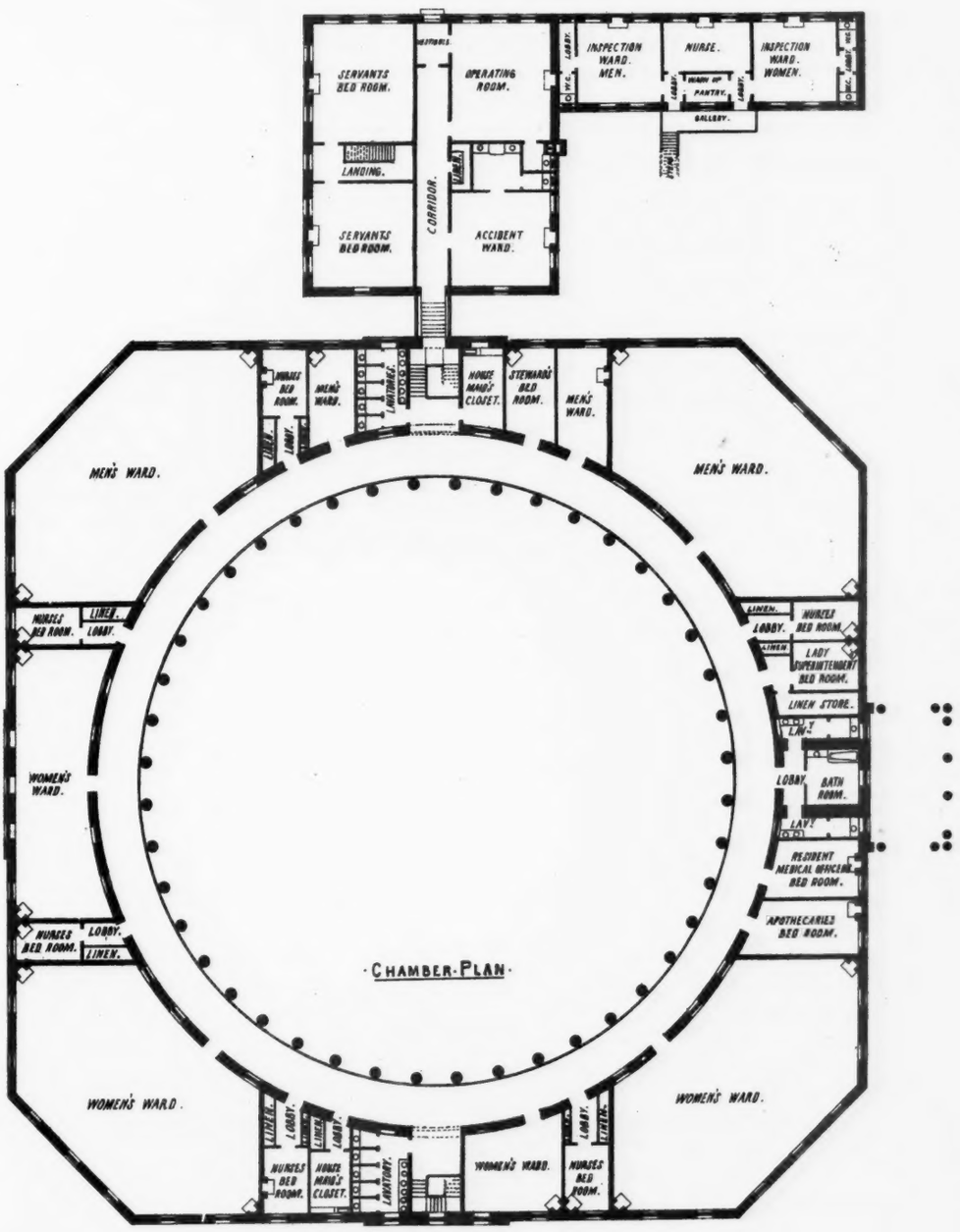
DEVONSHIRE HOSPITAL, BUXTON.—Mr. Robert Rippon Duke, Architect.



·SECTION·



·CHAMBER·PLAN·

Whiteman & Bass, *Photo-Litho* 236, High Holborn.

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DEVONSHIRE HOSPITAL, BUXTON.

burners, we may mention that the conservatory is illuminated at night by Dr. Siemens's regenerative gas-burners. Messrs. H. & C. Davis & Co., of Camberwell, are large exhibitors of stoves and apparatus for cooking and heating by gas.

Block XXVII.—Among the most noticeable exhibits in this block are the coke and gas boilers, and heat-radiators, shown by Messrs. Hocking, Franklin, & Co. (Limited), Liverpool. Messrs. C. Kite & Co., of Chalton-street, exhibit smoke-preventing chimney-caps, ventilators, &c. Messrs. Henry Wurr & Co., of Blomfield-street, show the "Ord" patent gas-engine.

The objects which we have here and there selected for mention, though comparatively few in number, are fairly representative of the whole, and will serve to show how much is now being attempted and achieved in the way of economising fuel and preventing smoke.

We shall have something to say on the subject in our next.

GALLERY OF CASTS: ACADEMY OF THE PLASTIC ARTS, VIENNA.

On the south side of the Schillerplatz, in Vienna, stands the noble building of the new Academy of the Plastic Arts, erected a few years ago, with profuse ornamentation in terra cotta. It comprises, amongst its treasures, on the ground-floor, a valuable collection of original specimens and casts from ancient and modern sculpture, and on the upper floor a valuable picture-gallery, illustrating almost all schools, and particularly the Dutch of the seventeenth century, also many examples of Raffaelle, Paul Veronese, Tintoretto, Titian, and other well-known masters.

The principal staircase leads to a spacious landing, supported on columns, and thence to the Aula, or Court, shown in our engraving, from which are entered seven large halls, filled with various art-works. The court illustrated has rows of columns at the sides supporting a clearstory, and a ceiling handsomely ornamented. It contains a fine collection of casts of the principal creations of classical sculpture.

The library, which adjoins it, contains books referring to plastic art, collections of engravings, and original sketches. The Academy comprises within its walls a school of painting and sculpture, as well as a special school in which are trained young men preparing to become engravers, medallists, and architects.

THE DEVONSHIRE HOSPITAL, BUXTON.

Our readers will remember that the extension building for the Devonshire Hospital and Buxton Bath Charity, at Buxton, was lately opened by his Grace the Duke of Devonshire. We give plans and sections in our present number illustrating the construction and arrangement, which are noteworthy. The building has a somewhat imposing appearance externally. The outer form is an irregular octagon with an inner circular area 164 ft. in diameter. Within this area is a circle of columns 138 ft. diameter, forming a colonnade 13 ft. wide all round the inner space. These columns with their entablature rise 25 ft. above the floor; and from the entablature springs the dome covering the area. The dome is a segment of a sphere, the diameter of which is 156 ft. 6 in., and springs from the stone entablature of the circular colonnade, which consists of forty-four stone columns, 2 ft. 4 in. in diameter.

The main framework of the roof consists of twenty-two strong wrought-iron latticed ribs, each 4 ft. in depth throughout, which are equally spaced, and are secured at their upper and lower extremities into two complete rings of wrought-iron, which, together with eight rings or tiers of purline framing, combine to render the structure entirely self-contained, and effectively prevents any outward thrust upon the supports.

The lower ring or polygonal bracing rests horizontally on the stone entablature; each bay or space between the main ribs being composed of two wrought-iron plates, each 15 in. by ⅜ in., interlacing each other at the centre; and the ends being strongly riveted to a third plate, which is combined with and forms part of the foot of the rib itself. The upper ring is vertical, 40 ft. in diameter, lattice-framed, and receives the ends of the converging main ribs between its upper and lower flanges.

The purline framing is of rolled girder iron, 8 in. by 5 in. by 5 in., and, in addition to its attachment direct to the main ribs at the upper surface, is braced diagonally thereto by means of T-iron, extending from the lower flange of ribs to a point on the purline 3 ft. 6 in. from its junction on the rib. This bracing also adds to the rigidity of the arched ribs.

There is also a framework of light rolled girder intermediate ribs, intersecting and attached to the several tiers of purlines, and to the upper central ring. Upon this upper ring, at a height of 76 ft. from the floor, are fixed the cast-iron pillars or supports of the lantern roof, which is 40 ft. in diameter, glazed at the top and sides, and formed of rolled iron ribs, radiating from a centre, and tied around their outer extremities by a ring of wrought-iron plates securely riveted, rendering unnecessary the use of any internal bracing.

A gallery surmounts the exterior at the summit of the dome and foot of the lantern, with suitable guard-railing, to which access is provided.

A Boyle's ventilator, of large power, is fixed on the apex, and there are louvres to all the sides of the ventilating lantern.

The superficial area of this hall is just half an acre, and it is capable of holding 6,000 people. Its cubic contents are about 1,000,000 ft. The heating of the wards, day-rooms, central hall, and building generally, is by hot-water pipes passing under the floor, and coils of pipes placed in the large wards and day-rooms, the smaller rooms, lavatories, &c., having pipes placed above the floor, and the hall having six rows of pipes around its whole circuit, four rows above the floor, and two rows under the gallery. The ventilation, in addition to that obtained through the windows, is supplied by 12-inch glazed earthenware pipes, starting from areas outside the building, passing under the floor, and having branches into each ward and round the colonnade, carried up 8 ft. above each floor level, in specially constructed wooden tubes. This description of the ventilation applies equally to the chamber-floor. In the centre of the roof of the lantern, as has been already mentioned, is a large Boyle's patent ventilator.

The principal entrance is on the east side of the building. On the left or south side of the entrance are the consulting-rooms, dispensary, resident medical officers' room, board-room, waiting-rooms, and secretary's office. On the right of the entrance are the inquiry office, waiting-room, master's and matron's official room, &c. The south side of the hospital contains females' ward, with 899 superficial feet area, nurses' day-room, main staircase in stone, lavatories, &c., bath and rubbing-room, nurses' bedroom and linen-store, and females' ward, containing an area of 2,551 superficial feet. This latter room forms the south-west angle of the building. The west side of the hospital contains females' ward, with 940 ft. superficial area, galvanic room, and separate entrances for males and females. The north-west angle of the building is used as a men's day-room, and has an area of 2,251 superficial feet; the north-east angle is occupied by a men's ward, having an area of 2,251 superficial feet. The north side of the hospital is occupied by two men's wards, having areas of 552 ft. and 294 ft. superficial respectively, a housekeeper's room, linen-stores, nurses' bedroom, and main staircase in stone. Passing under this staircase a covered way leads to men's lavatories, &c., rubbing-room, smoke-room, and conservatory. These rooms are detached from the main building. The covered way in question and a corresponding staircase lead to the different floors of a large block of building, entirely detached from the main building of the hospital, and with separate arrangements, containing ample cellarages, warming apparatus, kitchens, laundries, &c., and also distinct and separate accommodation for accident cases, with independent and easy access, and wards for the isolation of cases of infectious character that may have been inadvertently admitted, or may have manifested themselves as such after admission. The disposition of the wards on the chamber floor is similar to that on the ground-floor. At the south-east and south-west angles of the building are the females' wards, and at the north-east and north-west angles are the men's wards. These rooms contain each an area of 2,251 superficial feet, and are rendered especially light, and their cubic capacity is increased by the open-roof principle of finishing the interior, that is, plastering close under the slates, and thus getting into the room the triangular space enclosed by the usual ceiling and roof. Advantage is also taken of the four angle turrets on the roof to get additional light and ventilation into these wards. The access to all the wards is from the inner circle; on the ground-floor, from the central hall; on the chamber-floor, from a fireproof gallery.

On the east side of the chamber-floor are the bedrooms for the matron, the steward, the resident medical officers, &c., and also bath-rooms, lavatories, &c. On the south side is a females' ward, with 480 ft. area, nurses' bedrooms, linen rooms, lavatories, &c. On the west side is one females' ward, 940 ft. in area, with bedrooms for nurses, &c. On the north side are two wards for men, 252 ft. and 312 ft. respectively, and other bedrooms for officials and nurses. The original buildings cover half an acre of ground, which surrounds the half acre of the covered central hall; the new buildings cover one quarter of an acre, so that the hospital buildings now cover one acre and a quarter, in addition to the surrounding roads, yards, paths, terraces, borders, and shubberies, by which the hospital is entirely isolated. There are broad terraces and terrace walks on the south, in addition to the walks around the shubberies, for the use and recreation of the patients. These grounds, with the one acre and a quarter covered by the hospital buildings, comprise a total area of nearly three acres and a quarter. The extension has been carried out at a cost of 24,000*l.*, from the plans and under the superintendence of the architect, Mr. R. Rippon Duke. Messrs. Rankin & Co., of Liverpool, have done the ironwork. The roof is so stiff that it did not deflect ½ in. after being covered with the timber, slating, lead, glass, ceilings, &c. Messrs. Ellis, of Sheffield, have carried out the hot-water arrangements. These works are complete and most satisfactory. All other trades are by Mr. Warburton, of Manchester, whose work is not quite completed.

REREDOS FOR THE (R. C.) CHURCH OF THE HOLY CROSS, LIVERPOOL.

It is contemplated to erect at once an altar and reredos for the Church of the Holy Cross, Liverpool, the design for which will be found amongst our illustrations. The chancel is apsidal in form. The high altar and centre canopy will stand quite clear, to admit of sufficient space for steps behind to approach the throne. The altar and canopy will be of alabaster, the altar itself being supported by marble shafts. The shafts of the canopy will be of granite.

Running round the apse immediately under the sills of the windows is the reredos, which will be of Caen stone, and filled with subjects connected with the Holy Cross. On the dexter side next to the canopy will be St. Michael the Archangel bearing his own cross on his shield and another in his hand. Next to that will be the Descent from the Cross. In the niche on the same side will be St. Peter with his cross. On the sinister side there will be the Angel of the Apocalypse bearing the sign of the living God. The next group is the finding of the cross by St. Helen, and the miracle by which the true cross was distinguished from those of the two thieves. In the niche on this side is the figure of St. Andrew with his cross *saltire*. In the space under the reredos will be the panels filled in with diapers picked out with gold. In the quatrefoil in the top of each panel there is a shield, on which will be carved the emblems of the Passion. Below these panels will be a dado of dark marble. The steps of the altar will be of rouge royal of a dark tone. The cost is estimated at about 1,350*l.* It has been designed and will be carried out under the superintendence of Messrs. Pugin & Pugin, of Westminster.

Alhambra Theatre.—After being closed for several weeks for redecoration and to undergo some structural alterations, the Alhambra Theatre will be re-opened this Saturday, December 3rd, with an English Version of *La Biche au Bois*, under the title of the "Black Crook." The Lord Chamberlain having required the directors of the Alhambra to make a fireproof division between the stage and the auditorium, advantage has been taken to make various improvements in the theatre, not the least of which is a widening of the proscenium, and a raising of the seats on the ground floor, by means of which a much better view of the stage is obtained. The dome is to be illuminated by the electric light, the effect of which we will report.

MANCHESTER AND ITS TRADE.

"At social industry's command, how quick, how vast an increase!"

That expression of Wordsworth's, and his description of the huge town, "continuous and compact," may be said to have special application to Manchester. It has the germ of the small hamlet the poet speaks of, though distant in age, but from the building of its collegiate church, from the establishment of schools, it grew slowly, while an increased commerce, as it was made possible by free transit, gave impetus to it. The Manchester of to-day has little or no likeness to that to which the Flemish artisans came five centuries ago to bring woollen manufactures to perfection. It is, indeed, within the last hundred years that cotton has become king of commerce in Manchester, and has made the city great. The power-looms and the inventions of Hargreaves, Arkwright, Crompton, and Watt are the sources of that centreing of trade on the Irwell which has made the place continuous and compact, and which gives to it its life-blood of progress. If even we glance at the condition of Manchester five decades ago, and contrast it with the present, we shall see how in the later years the progress has been most marked. It had then the large population of 187,000 inhabitants, or with out-townships and Salford, 279,000. It was governed by a borough reeve and two constables, and Salford was similarly held in ancient thrall. It was sparsely provided with public buildings,—the Exchange of 1809 was then one of the chief; the old town-hall in King-street was in course of erection. It had a score of churches, and Christ Church was approaching completion; whilst there were more than double that number of Dissenting places of worship. Infirmaries were numerous, public charities many. Its trade was indicated by the fact that it had 20,000 steam looms in the parish. Its general post-office in the Exchange Buildings had six receiving-houses connected with it; there were seven general deliveries. In an old directory of a year or two later, the names of nearly a thousand manufacturers attending its market were given, ten coaches to London ran, and others to all parts of the kingdom, whilst carriers by land and water were almost countless. There were conveyances by railway,—"seven times a day (Sundays excepted) to Liverpool," "first-class trains," four in number; "second-class trains," three. And it is worthy of note that "omnibuses for the conveyance of passengers by the first-class carriages" left the offices in Market-street "twenty minutes before the carriages leave the Liverpool-road Station." There was a literary and philosophical society in those days at 40, George-street,—"John Dalton, esq., D.C.L.," being the president. The Mechanics' Institute existed in Cooper-street; there were barracks for 55 officers and 1,099 men; Cheetham's College Library was in Hunt's Bank; the Tax-office was in Tib-lane, the waterworks office in Piccadilly, the two theatres were in Fountain-street and Spring-gardens. In a sentence, Manchester in those days was the unfilled outline of that great city that we now know.

It is during the greater part of the last fifty years that Manchester has known its growth,—its benefits from the railway system having been great. Records of the growth are to be found in the recognisation by Parliament of its importance at the time of the first Reform Bill; of its incorporation; of its creation into the see of a bishop; of its being the centre of the operations of the Anti-Corn Law League; and of its being the scene of the opening of that Arts Treasures Exhibition that has had no compeer. Its architecture has been improved by the building of stately palaces such as the Assize Courts, and by the removal of some of the worst of its insanitary streets; the town has had the benefit of the formation of grand free libraries, and of magnificent parks, and it has felt the impetus of these changes and of these improvements, so that it is widely different from that of fifty years ago. It has much to do yet before it becomes a model town. In the last two decades much has been done to ornament the city with stately abodes of justice, religion, trade, commerce, and local government. The Assize Courts that make Strangeways dull by contrast with their Gothic grandeur, have been built at a cost of about 100,000*l.*, whilst for a very different use the fine new town-hall has been completed, also at an immense cost; and the Queen's Theatre, the Memorial Hall, and the Assembly-rooms, have been added to the stately structures of the city in the period we have named. Statues have been added, parks completed, great gardens designed, grammar-schools built, and many of the gigantic warehouses of the city erected in the time. The churches and chapels have been increased till they now number about 200, the greater part of them the temples of various shades of Nonconformity, and many of those, of all denominations, stately structures, whilst there is continually in progress an addition to the number, and from the Greek Church to the Quakers, from the Jews to the Moravians, it would seem that every form of faith finds its fitting tabernacle in the great city. With a population that has in its Parliamentary bounds grown to 393,676, it is to be expected that both in the provision for its religious, social, and educational needs there would be required a supply on a scale of magnitude, and this has been found. The local governors of the past in Manchester took an exalted view of the needs of their city, and they endeavoured to bring it up in some things to their ideal. They bought up gas and waterworks, and speedily had from the first a profit of 1,000*l.* a week. They extended the waterworks at Woodhead until their capacity was enormously increased; then the reservoirs, such as Prestwich, were commenced; and finally the Corporation has decided to go far into lakeland to find an adequate supply of water for its needs. Sewerage was laid down by the mile, streets were paved by the score, cellars were closed, and some of the worst of the streets were razed bodily and air-courses run through. Latterly it can scarcely be said that the great efforts that were made at improvement have been continued on so large a scale,—by the Corporation, that is; but some of the great companies have taken an adequate view of the necessities of Manchester, and the provision that has been made at the central station is worthy of the city, and would put to shame that of the older railway efforts if it were not that at Victoria extensions of no mean order are in progress, one railway company alone (the London and North-Western) having for some time spent over 20,000*l.* monthly in the efforts to meet the needs of the city of Manchester for passenger accommodation. That city has grown so great, indeed, that it may be said to be one of the wonders of the country, and though the rate of its progress has been checked, it is but the check that precedes the further growth. It is not needful to give figures to trace its further progress, they are to be found readily in the number of its electors, the area of its borough, the extent of its rateability. It has its criminality, as the 9,000 or 10,000 yearly drunkards attest; whilst 480 public-houses and nearly 2,000 beerhouses should supply the needs of its citizens, and may aid in the needs that require over 800 policemen. In all the essentials of town life, as well as in what must be considered the inevitable, if saddening, accompaniments, Manchester has its full share; but it is to the credit of its people that in stately parks, in noble libraries, and in other ways, it has sought to give compensating recreation to its vast population.

As to the trade of Manchester, it must be said that the vast growth of the past was for years extended and increased when the railway system gave facility of transit, and when its sister, the steamship, gave cheap and rapid sea carriage. For years that great trade in which Manchester is king grew, and others grew with it. Not alone is Manchester at the head of the cotton trade, but many of the textile trades are domiciled in it or in its neighbourhood, and all contribute to its progress in industry. To textile fabrics it has added vast machine-shops, and it is said that there are in it nearly a thousand varieties of occupations, from the cotton-spinner to the enginewright, and from the paper-stainer to the umbrella-maker. A glance at some of its great streets is like that into a fair, and from all these varieties of industry Manchester takes toll, and continues to prosper. It has had its periods of dulness in the great industries to which the others are contributory, or which they depend on, and it finds an increasing rivalry in these, not only at home, but abroad. But the true Manchester man finds in competition a stimulus, and so in that great industry to which he is so largely devoted it has in the past proved, and may do so in the future. At the same time, it is to be held in remembrance that Manchester has to meet a fiercer competition, and one that in some parts of the Continent shelters itself cowardly behind heavy duties. It has also here to meet a state of affairs where taxation is heavier perhaps than in any country; and it is probable that this is a feature of the international competition that our traders have hitherto not sufficiently taken into account, but which they will in the early future have to endeavour to lessen as much as possible. Manchester has felt this especially, locally and nationally, and it has had of necessity slightly to relax its efforts in local improvements on this account. But it will again begin to attack some of the causes that led to its having too high a death-rate: it will have to take advantage of some of the efforts that its railways are making, and to pull down some of the unsanitary and unsightly dwellings that are to be found in the heart of the city; and it will have to complete the task of providing a full supply of the purest water. Its trade will grow as the competition that it has to meet is overcome by cheapened products and increased superiority of production, and especially as it fits itself to supply to newer markets in other lands the materials they need. The opening up of new markets in Africa, in parts of the great East, and in our colonies, is one of the needs of the trades of Manchester; but the men to whom British commerce owes so much should be able to overcome the little difficulties in their way, and should give by these means an impetus to endeavours which should be sufficient to make the trade of their city grow in the future more rapidly even than in its glorious past.

THE NEW PUBLIC OFFICES AND PIETRA DURA ARCHITECTURE.

Sir,—The urgent practical remarks in the *Builder* of last Saturday in reference to the sound construction,—especially from a sanitary point of view,—of these buildings, are not made a moment too soon, and if carried out,—as, indeed, they must be,—the large class of persons interested, and whose health, if not life, is concerned, will be deeply indebted to you.

There is another practical matter which, although it is not of such immediate importance, will, nevertheless, call for serious consideration at no distant date.

When, in 1872, the designs for the Royal Courts of Justice were being discussed, the "battle of the sites," the "battle of the styles," the "battle of the architects" were the themes on which the writers in the daily papers exercised themselves; but we looked in vain for a word to indicate that any combatant in the arena had devoted one thought to the question of at least equal, if not greater, importance to them all,—that between preservation and perishableness, form and chaos, beauty and decay. Now, again, in this year of grace 1881, the war clarion has sounded, and it is satisfactory to hear the notes dwell on a subject of useful and practical importance. The leading journal says, "What will be the fate of its exterior carvings and frettings after another fifty years of London smoke all of us can tell. The same may be said of a thousand other buildings, great and small, that the past generation of Londoners has raised as monuments of its own ignorance of the simplest conditions of good building. . . . . They crowd their fronts with carvings of flowers and fruit, which in a year the soot will blacken past recovery, and in five years corrode beyond recall. It is not in work of this kind, we may fairly believe, that the public money is to be spent in the case of the new offices."

This is strong language; but when we see important and costly edifices restored in the lifetime of the architects who designed them, and palaces patched with cement and painted over every three or four years, before their builders have passed away, what professional man can say that they are too severe, or that they exaggerate the facts?

Against the repetition of these evils,—of such a catastrophe,—what effort can be too great, what measure of defence too costly or too troublesome? It is a point of honour that we have to fight for, and if defeated we are irretrievably disgraced. Hundreds of thousands of pounds sterling are annually expended in saturating wood with creosote, and coating iron with zinc and tin, to secure the durability of various national structures,—ships, harbours, &c.,—but no remedy has been found for the decay of soft calcareous stone in our smoky cities; and yet, in our childish helplessness, we continue to use it daily and year by year

as if we had had no warnings of the folly of doing so.

As you have before allowed me to urge, the only remedy is to be found in the use of the igneous rocks,—granites of various kinds and colours, and the serpentines and basalt, polished so as to exhibit their characteristic beauty, for the general surface, with, in some cases, majolica encaustic tiles and faïence for details. Nothing but the element of fire, natural or applied, gives the requisite power to materials to withstand the powerful and destructive effects of the sulpharous acid and other gases of the London atmosphere.

The invention of the requisite machinery, the extension of railways into the very heart of the inland granite quarries, and low freightage by ship from those on the seaboard, have wonderfully reduced labour and prime cost to that of the best ordinary stone in London. The actual cost of putting a perfectly fair surface on roughly scabbled granite, as delivered from the quarry, is only 7d. per foot super., and 120 ft. can be dressed per diem. By manual labour a foot costs 2s. 6d. The result, therefore, is, that while a day's work with one machine costs 3*l.* 10s., the same work would occupy a man forty days at a cost of 15*l.*

Messrs. Mortal, Magné, & Co. report that it takes a man five days to do the work one machine performs in three hours; and the patentees claim that, with proper arrangements of overhead travellers and cranes for rapidly picking up and removing the blocks, one machine will do the work of about forty masons: that the running cost, including power, wages, grinding cutters, interest, and depreciation, is equivalent to the wages of about eight men, showing a saving equal to the pay of thirty-two masons. Lathes, by some patentees, for turning columns, do the work of from ten to fourteen men at the cost of two or three. There is another advantage not to be despised,—machines do not strike.

Polishing granite is an exceedingly cheap process, one or two boys only being required to apply sand, emery, and putty-powder, to a wagon slowly travelling under rapidly revolving rubbers, both worked by steam-power.

The question is, how to secure the benefit of all this for important architectural works in London?

A short time since the writer tried to form a company for the special purpose, and all promised well for success till it was converted into a purely engineering concern for dock and harbour work, to suit the financial ideas of one or two commercial men, who, in the course of formation, became connected with it. But if the proposal would really confer the economical benefits upon the public which is claimed for it, is it not incumbent, and would it not be an honourable proceeding on the part of the leading members of the profession, to form a deputation to the First Commissioner of Works and Public Buildings, and, after laying before him proofs of the futility of any longer persisting in the use of perishable stone, request that a stipulation should be inserted in the conditions to architects invited to send in designs for the intended Public Offices, requiring the exterior to be constructed of the various polished granites, basalt, and serpentine, from quarries in the United Kingdom? By this means not only would all competitors be placed on the same footing, but when the accepted plans were determined upon, and the tenders called for, the granite dealers would find themselves in competition for a noble work, and the utmost economy would doubtless be the result.

With simple and appropriate treatment of the materials,—flat geometric ornamentation in the different and almost unlimited colours obtainable; no mouldings, but only splays; no projecting carvings, but only superficial scrollwork upon dead grounds, which, at option, and for greater richness, might be gilded,—it is more than probable that no additional cost over and above carved and moulded stonework would be incurred.

As a retired architect, I shall, I trust, be pardoned by the profession for going into these details,—the result of a good deal of study,—as it is obviously necessary to do so, but nothing would give me more pleasure than to see some better proposal to meet what is very generally, if not universally, admitted by architects to be an urgent want, and by the taxpaying public a crying evil.

H. TRAVIS.

SKEGNESS BATHS COMPETITION.

AT a meeting of the directors of the Skegness Swimming, Hot, Cold, and Turkish Baths Company held on the 22nd November last, it was decided to adopt the design sent in under the motto "Convenience with Economy"; the author of which, Mr. James Whitton, of the city of Lincoln, was commissioned to carry out the work; the second premium being awarded to Mr. H. A. Goodall, of Nottingham. Seven designs were sent in. The buildings will be commenced at once; the baths will be supplied with sea-water. The materials to be used are red bricks for all walls, stone being slightly used in the fronts. The swimming-baths will have iron roofs, covered with galvanised corrugated iron.

THE MAIN DRAINAGE OUTFALLS AND THE CONDITION OF THE THAMES.

AT the meeting of the Metropolitan Board of Works on the 25th ult., the Works Committee presented a report recommending the enlargement of the reservoirs at the Crossness Pumping Station and Barking Outfall Works, at an estimated cost of 160,000*l.*, and that the Engineer be instructed to prepare contract drawings accordingly; and that it be referred to the Finance Committee to see that proper provision is made in the Board's Money Bill of next session for meeting the expenditure upon these works. The report was adopted.

The same committee, reporting on the letter from the Local Government Board, transmitting a copy of a letter from the vestry of Plumstead with reference to alleged pollution of the Thames by sewage from works executed under the Metropolis Local Management Acts, recommended that a reply be sent to such letter in accordance with a report made by the Engineer and the Consulting Chemist.

On the motion that this recommendation be adopted, Mr. Jolley, as representing Woolwich, demurred to the accuracy of the statements contained in the report referred to, observing that at certain states of the tide the Thames at Woolwich was no better than a common sewer.

Mr. Richardson denied this, and the recommendation was adopted.

Mr. Richardson and the majority of the Board notwithstanding, the condition of the Thames, in consequence of its being made the receptacle for the sewage of London, is, as we have often pointed out, very unsatisfactory, and we note that the question of seeing what can be done to purify and keep clean the river has been referred by the Corporation to one of its committees, viz., the Port Sanitary. This committee, having given the subject their best consideration, appointed a sub-committee, with instructions to ascertain the exact state and condition of the water of the river. The sub-committee, after conference with their medical officer, decided to go on with their inquiries at once, so that it should not be said that an exceptionally unfavourable period of the year was chosen, and proceeded to Tilbury on Wednesday in last week, on a visit of inspection. Upon arriving at Tilbury by train, the sub-committee boarded their steamer, and it being just after the ebb-tide had turned, the steamer at once started from Tilbury in the direction of London. Samples of the water were taken off Gravesend, Greenhithe, Erith, and various places near to where the training-ships are moored, most especially at the great outfalls near Crossness and Barking Creek, and also at several points between Barking and Blackwall. Feeling satisfied that, as the result of their efforts, they had obtained fair samples of the water in various parts of the river, the bottles containing the fluid were at once sealed up, and each one numbered in the presence of the committee-men. Several of these samples, the *City Press* states, are, by resolution of the sub-committee, to be submitted for analysis. When it is borne in mind that the estimate, based upon data derived from the best sources, is that the daily average number of persons engaged on craft, small and great, on the river, amounts to 20,000, it will at once be seen that they alone must necessarily pollute the river to a considerable extent. But when we hear that between Teddington and Gravesend there are nearly 400 open outfalls (large and small) it will be seen how important is the work the Corporation have undertaken. Of course, many of the outfalls in question are small and insignificant, but in the aggregate they are considerable, and seriously pollute the river. The greatest source from which the foul matter comes are doubtless the outfalls from the docks and the metropolitan drainage at Crossness and Barking Creek.

THE PROPOSED AMENDMENT OF THE BUILDING ACT.

AT the meeting of the Metropolitan Board of Works, on the 25th ult., it was announced that a letter had been received from Mr. C. Fowler, on behalf of the District Surveyors' Association, requesting to be favoured with a copy of the draft Bill for amending the Metropolitan Building Act, which the Board propose to submit to Parliament in the ensuing session, as the district surveyors are desirous of suggesting one or two important amendments. The letter was referred to the Building Act Committee.

In the public notice which has been given by the Board of their intention to apply for an amendment of the Acts relating to buildings and streets in the metropolis, the following objects are mentioned among those for which powers are sought:—

To confer on the Board further powers as to streets and buildings in the metropolis.

To enable the Board to attach to licences granted by them for buildings of a temporary character conditions as to the term for which such licences shall endure, and to provide for the removal of the building to which such licence relates at the expiration of the term for which the licence was granted, or to impose penalties in cases where the terms and conditions of any such licence are disregarded.

To alter and increase the dimensions of which the Board may authorise the construction of buildings without being divided by party-walls or party structures.

To enable the Board, as well as any vestry or district board, to exercise or put into force the powers conferred by Section 75 of the Metropolis Management Amendment Act, 1862, upon vestries and district boards in the case of buildings erected without the consent of the Board beyond the general line of buildings, and to enable the Board to proceed under the said section to obtain and enforce orders for the removal of buildings so erected, and for the recovery of expenses incurred in carrying out such orders.

To enable the Board to attach and enforce conditions in cases where building beyond the regular line of buildings is permitted, and particularly a condition that any land or space in front of the regular line of building shall be dedicated to or left open for public use.

To control and regulate the alteration of dwelling-houses or other buildings into public buildings, as defined by the Metropolitan Building Act, 1855, or to prohibit the alteration of such dwelling-houses or buildings into public buildings.

To enable the Board to pull down, remove, or alter ruinous or dilapidated buildings, or buildings declared by the order of a magistrate to be a nuisance, and to charge the expense thereof upon the property, and to enable the Board to recover the same, or to require the owner of such buildings to pull down, remove, or alter the same, and to provide for the making, by a magistrate, of orders relating thereto, and to authorise and provide for the recording and registration of any such charge.

To confer on the Board powers as to the removal and pulling down of irregular buildings and structures.

To prohibit or regulate the use or construction of wooden and other structures of a movable or temporary character, timber stages, stacks of timber and wood, and other similar erections, and to enable the Board to license, control, and regulate the same.

To prohibit, during such period as the Bill may define, the locking or fastening of doors, and other means of exit at theatres, music-halls, and places of public resort or entertainment, and to require sufficient notice to be set up in such theatres, music-halls, and places as to the means of exit, and to provide for the inspection of such places, and the enforcement of the requirements of the Board.

To remove or alter existing restrictions as to the distance at which hot-water pipes in buildings shall be placed from combustible materials.

To alter and amend Section 29 of the Metropolitan Building Act, 1855, and to make further provision as to the space to be left in the rear or at the side of houses, and to require an open space to be left between houses built back to back.

To make further provisions as to the projection of cornices of shop-fronts, and to prevent and remove projections.

To make further provisions as to the appointment of an umpire or arbitrator for the settlement of differences between building owners and adjoining owners, as defined by the Metropolitan Building Act, 1855, Part 3 (relating to party structures); or between the owners of adjoining buildings where the owner of one building desires to execute any work which may affect the adjoining buildings, and to confer upon the umpire or arbitrator so appointed the necessary powers for the settlement of such differences.

To enlarge the powers of the Board for directing and enforcing the alteration of the naming and numbering of streets; for preventing the narrowing or obstruction of streets or thoroughfares by posts or otherwise, and for removing any such obstructions.

To amend the provisions of the said Acts with regard to the laying out of streets, and to confer upon the Board further control over new streets, the mode and direction in which they shall be laid out, and as to openings in the same, and to prevent such streets being laid out or made otherwise than in accordance with the directions of the Board.

To amend and extend the powers of the Board relating to dangerous structures within the metropolis, and to confer on the Board further powers for the recovery by them of the expenses incurred in connexion with dangerous structures, and to provide for charging such expenses upon the structures or sites thereof, and for prohibiting any building upon such site until such expenses have been paid, and if need be to authorise and provide for the recording and registration of such charges.

THE METROPOLITAN BUILDINGS ACT.

CAVITY WALLS, ETC.

Sir,—Since it has been announced that the Metropolitan Board of Works contemplate applying for a new Act of Parliament to regulate buildings in the metropolis, with a view, I hope, to embody therein provisions for the many new requirements of the age and to correct the many anomalies of the existing Acts, I wish to draw attention to the question of cavity walls. It has always seemed to me to be a very great anomaly in the present law that a party-wall may be, and often is, built almost wholly composed of flues, and thus practically a cavity-wall with two half-brick enclosing walls and a 9-in. cavity (as a two-brick wall) divided in its length every 14 in. or so by only half-brick wythes, whereas an external wall composed of a brick and a half-brick wall, securely bonded together, having a 2½-in. cavity between them, is not allowed, where a brick and half wall is prescribed, although the Act allows half the surface of the wall to be recessed and only one brick thick, but, to comply with the Act, the cavity and enclosing wall must be added in excess of the thickness. The desirableness of cavity-walls for imperviousness to weather and atmospheric influences no one will deny, but their adoption is thus rendered prohibitive on the score of expense and loss of space. Surely there is more danger from fire in cavity party-walls, even where the flues are well pargetted, than there would be in cavity external walls, and if the pargetting is so great a security in the one case, why not apply it to the other also? Then, on the score of strength, surely a wall built with a cavity of 2½ in., the enclosing 9-in. and 4½-in. walls being well bonded together, is as strong, if not stronger, than an ordinary brick and half wall, and most certainly sounder and stronger than the 18 in. wall with a 9-in. cavity of flues.

Considering the humidity of our atmosphere and the porous nature of the bricks commonly used, it is not surprising to hear so many and frequent complaints of the dampness of our houses; and this leads me to think that, instead of the Act being prohibitive, it should enforce the adoption of cavity enclosing walls in all cases.

I think revision is also very necessary in Part I., section xiv., of the Building Act. For my part, I never could see the reason for setting external woodwork, such as window and door frames, 4½ in. in reveal; it is surely absurd to say that this affords any security from fire, or why should shop-fronts be allowed? And it, no doubt, originated in the classical tendency of the period when the Act was framed. There is an anomaly, again, in this; for although sashes and frames have to be set in reveal, wooden blind-cases, even projecting beyond the face, can be fixed with impunity. I, therefore, cannot see why the restriction should exist, as it to a great extent cripples freedom of design in these enlightened days of art.

I am induced to send you these few remarks, which, if you favour by insertion, will, I hope, call forth the favourable opinion of the profession, and lead to full consideration by the framers of the new Act.

Thomas Harris, F.R.I.B.A.

ARTISTS' ASSISTANTS.

To what extent may artists avail themselves of the talents of other artists in carrying out their works, without laying themselves open to the charge of imposture? This question will, in all probability, have to be legally decided. It is a question, however, less easy of solution than one would at first imagine. In this country it is chiefly by portrait-painters and portrait-sculptors that assistants are employed, for excess of commissions in these specialities falls to a few fashionable favourites.

When mural painting was at its height in Italy, the institution of scholarships was necessitated; for it would otherwise have been impossible for the great painters to have carried out their various series of works. Highly skilled assistance was imperatively necessary, and it is well known that many of Raffaelle's scholars, also eminent painters, assisted him in carrying out his great works. Michelangelo, alone, persisted in carrying out, unaided, his mighty performances in painting and in sculpture.

Till comparatively recently the position of the fine arts in this country was very unstable, partly on account of defective art-educational means, partly on account of the scarcity of public employment for artists, and partly on account of the crass ignorance of all classes of the principles and practice of art. There was Flaxman, self-educated, on the intellectual side of art, but deficient,—exceedingly deficient,—in the *technique* of his art, who was obliged to have recourse to skilled assistance. There was Chantrey, with a mind above wood-carving, who was gradually inducted into the profession of sculpture, on account of his skill in making busts, and without ever having had any thorough and systematic education as an artist, obliged to seek aid from designers, as well as technically-skilled assistants. It is known that the two sleeping children in Litchfield Cathedral, which made his reputation, were designed by Stothard. There was Behnes, who could model a bust and carve splendidly, who was nowhere in regard to composition. The public are in that utter darkness with regard to art-matters that they fancy that any one who may be at all skilled in some art speciality is capable of any art achievement,—is, in fact, a great artist. It is they, the public, who are to blame for forcing men into positions in art for which, as artists, they are not competent. And if men are so forced, what is to be done by these recipients of adulations and favours but to endeavour by hired talent to support the dignity of the positions into which, *nolens volens*, they have been thrust? And, after all, this is nothing more nor less than assuming the position of the manufacturer who employs skilled labour; the proprietor furnishing the capital and courting a demand, whilst the skilled servitors employed enable him to furnish the supply. Whether this be legitimate or not, there can, we think, be but one opinion, that it is highly reprehensible that one who has accepted pay as servitor should be permitted to hold his talent *in terrorem* over his employer. We may have our own private opinion of the merits of the head of an art-manufacturing establishment, as an artist, but this is quite another matter.

Looking at the question, however, from a purely artistic point of view, let us see if we can formulate any definition of the line which should be drawn in the employment of other talent than the artist's own, in carrying out his works, which is discreditable to him. In the case of Raffaelle there can be but one opinion, that his was the master-mind, and that he was fully capable, unaided, of carrying out any of the great works that were produced under his direction by thoroughly educated assistants. Flaxman's case is somewhat different: if he had had to carry out, unaided, his own beautiful designs, they would have been considerably marred by his want of technical skill, yet not one of his assistants could have executed works comparable with Flaxman's with any other aid but his. Chantrey's position in respect to this question is somewhat different still, for he had considerable technical knowledge, and was a bold and facile modeller, but Chantrey was no designer. In this case the question seems to be balanced, Chantrey could not have produced the work in Lichfield Cathedral without Stothard's aid, nor Stothard without Chantrey's. It would appear, therefore, from the foregoing instances, that when a work is indebted *for its merits* to the assistance of an artist of greater mastery than his whose name it bears, his artistic reputation must suffer if the fact becomes known.

CLERKS OF WORKS AND FOREMEN.

Sir,—While architects have two societies in London alone, and, if I remember correctly, fifteen others in various parts of Great Britain, for the purpose of acquiring additional knowledge in their profession, by, if I may be allowed the expression, "mutual friction," and which also enables them by association and good fellowship not only to advance their individual interests, but in many ways to confer a benefit upon the public at large, there is a large class of men with whom by necessity architects are daily brought in contact, having no society of the kind whatever,—I allude to the clerks of works, builders' foremen and managers, and others placed in a similar position. I may be told that there is a society called the "Clerks of Works and Builders' Foremen's Association," or some such title, but I think this is only a benefit society; at any rate, we hear and read but very little about it,—in fact, an inquiry in a contemporary relative to its *locale* and functions failed to elicit a single reply. I maintain that the large body of men fulfilling the positions of clerks of works, managers and foremen to builders, carvers, art metal-workers, decorators, and other trades allied to building, are not only of due necessity the most practical of their respective callings, but are possessed, many at least from large and life-long experience, of varied and technical information that would not only be of much service to their younger brethren treading in their footsteps, but of mutual gain to all concerned.

The *Builder*, many years ago, took up the cause of the present Architectural Association, and I submit that the *Builder* to-day might with equal fitness take up the cause of an Association of Clerks of Works and Foremen Builders. The present age is one of progress, and in the battle of life no effort should be spared, whatever our position, to fulfil, in the best possible manner and to the utmost of our abilities, the duties imposed upon us. The *Builder*, from the first, has strongly advocated the advantages of mutual self-help, and I therefore with the more confidence suggest that an intimation to the effect that you, sir, would be willing to receive the names and occupation (not necessarily for publication) of those willing to move in the matter, and by a small annual subscription provide sufficient funds for the ordinary expenses of an association of the kind, would in the columns of the *Builder*, as an initiatory step, be quite sufficient to test the general feeling on the subject.

A Clerk of Works.

DEVELOPING SOUTHAMPTON.

The Corporation have been for some time past carrying out very important works of street improvements and paving. The whole of the footways of the High-street on each side of the ancient Bargate have been repaved with Caithness stone flagging, supplied by the Caithness Stone Flagging Company, of Thurso, Scotland, the gradients of the carriage-way and line of street being at the same time considerably improved.

In the district of Portswood nearly eleven miles of new roads have been made up and completed. The suburban streets are being paved with Staffordshire blue bricks, supplied by Mr. Joseph Hamblet, of West Bromwich; they are laid upon a foundation of Portland cement concrete, 3 in. in thickness, and well grouted in with Portland cement. A separate system of storm water-drains is being gradually laid over the whole borough for the relief of the existing main sewers.

The works, which up to the present time have cost nearly 15,000*l.*, have been carried out by the borough surveyor, Mr. W. B. G. Bennett, Assoc.-M. Inst. C.E., and at the last meeting of the Town Council it was unanimously resolved to spend a further sum of 6,250*l.* for blue brick paving.

Building operations are being carried on with great activity; in one district alone upwards of 600 houses have been erected by an enterprising townsman, Mr. Jonas Nichols, who has laid out nearly four miles of roads; the district is named Nichols Town, after its founder. The town is greatly indebted to this gentleman for his gifts of several pieces of valuable land for the purpose of public improvements.

A very pleasantly-situated estate known as Westwood Park, adjoining the Southampton Common, has recently been laid out for building purposes, and several villa residences have already been erected, principally from the designs of Mr. James Lemon, F.R.I.B.A. Another extensive estate known as Fitzhughs, in the adjoining district of Shirley, has also been laid out for the same purpose, and a great number of houses have been erected, and many more are in course of construction. Building operations on a large scale have also been commenced on two other estates, and it is proposed to connect a fifth to Southampton by erecting an iron bridge across the river Itchen at St. Denys. A great impetus to building has lately been given by the introduction of the tramways into Southampton.

For many years the Corporation have been endeavouring to prevail upon the London and South Western Railway Company to abandon their level crossings, a source of great inconvenience to the public at Bridge-road and Marsh-lane; their endeavours have been successful, and the company are now constructing a handsome high level bridge across their lines.

This work when completed will be an imposing structure, and a great boon to the public. The contractors are Messrs. Bull & Sons, and the cost of the work is estimated at 40,000*l.*

A very determined effort is being made by the inhabitants to obtain a second line of railway into the town by extending the Didcot and Newbury line from Newbury, and a bill is to be promoted in Parliament in the next session for the necessary powers. The Town Council at a recent meeting resolved to subscribe 50,000*l.* towards the undertaking from their corporate funds. This resolution was enthusiastically ratified by the burgesses at several large public meetings, as was also a resolution granting for the use of the company about 30 acres of the mudlands of the Western Bay, the company undertaking to reclaim in all about 47 acres, and to construct a public roadway 60 ft. wide and 3,000 ft. long, on a solid embankment facing the water. Independently of the sum above mentioned, a public subscription amounting to 50,000*l.* has been raised in the town. The Corporation of Newbury have also resolved to subscribe a sum of 10,000*l.* out of their corporate funds in furtherance of the project, and a similar proposition has been adopted by the Corporation of Winchester. The Harbour Commissioners have not been unmindful of the requirements of the port, and they have recently carried out large works in extending their quays and warehouses, and are about to apply to Parliament for powers to borrow 100,000*l.* for further extension works.

Southampton stands fifth on the list of ports of the United Kingdom, and the familiar saying of the Southamptonians that their town is the Liverpool of the South bids fair to be more than realised, for naturally Southampton is favourably situated for the development of docks and quays.

EXETER.

Restoration of St. James's Church.—The second portion of the work of rebuilding the Parish Church of St. James has been completed, and the ceremony of re-opening took place on November 25th. The church was erected in 1836, but it could not be regarded as an architectural ornament to the city, and it never afforded sufficient accommodation for the church-going population of the parish. When the parish of St. James was separated from that of St. Sidwell, between forty and fifty years ago, the population of St. James's parish was about 3,000. The church was built to accommodate 1,200 worshippers, but it never did afford accommodation for anything like that number. The whole cost will probably be not less than 6,000*l.* The architect is Mr. R. Medley Fulford, of the Cathedral Close. The architectural style of the building is the First Pointed. Mr. Stile was the builder. Prominent as the chief adornment of the new chancel is the east window, erected in memory of the late rector, the Rev. A. Buckeridge. It is a triple-lancet window, 18 ft. high, filled with stained glass by Messrs. Clayton & Bell. The window contains a representation of the Crucifixion, the Blessed Virgin, and St. John. The total cost of that portion of the work was about 1,400*l.* The next section of the work taken in hand was a nave and three bays, with shallow arches, extended eastwards about 20 ft., shallow aisles, west porch, and tower. The final portion of the work, proposed to be undertaken as soon as funds will allow, is that of the two shallow transepts, with the double arches in a line with the future nave arcade, and circular staircases for access to the galleries for school-children, thus enabling them to leave the church quietly. All the principal contractors hail from Exeter. The builder was Mr. Gibbard; the mason Mr. Robert Mitchell; and the gasfitters Messrs. Sheppard & Sons. The carved angels are by Mr. Harry Hems; and the geometrical glazing is by Mr. Fred. Drake.

St. Petrock's Church.—On November 24th the Lord Bishop re-opened the Parish Church of St. Petrock, which has been considerably enlarged and restored from the plans of Messrs. Hayward & Son, at a cost of 1,250*l.* The contractor was Mr. Cumming, of Exeter, and Messrs. Easton & Sons, of the same city, did the masonry.

The Cathedral was lighted with gas for the first time on Advent Sunday, November 27th. Innumerable jets go round the abaci of the capitals. Mr. Fred. Rice, gasfitter, of Exeter, has carried out the work.

The Old Guildhall.—The Elizabethan front of this ancient building was built in 1593. It projects picturesquely over the pavement of the main thoroughfare, and is a unique feature in Exeter's venerable High-street. Some of the stone-work having fallen down, the Town Council requested Mr. Edward Ashworth, architect, of that city, to examine the façade, and he has sent in a report upon it, in which he says that the mode of staying the front, where it has been disposed to bulge, is not quite satisfactory.

CITY OF LONDON SCHOOL: SCULPTURE.

SIX firms were lately invited to send in models and sketches in competition for the sculpture for the City of London School now being erected on the Victoria Embankment by Messrs. John Mowlem & Co., under the direction of Messrs. Davis & Emanuel, architects. The committee having selected those sent in by Messrs. Daymond & Son, these gentlemen are now appointed to execute the work, which consists of allegorical figures in the tympans, representing the Arts and Sciences, the keystones having masks representing the ancient Classics, and the five niches statues of their more modern eminent representatives. In the spandrels will be placed the shields of the City Companies and other donors.

ACTION OF WATER UPON LEAD PIPES.

ACCORDING to reports of the proceedings at last week's meeting of the London Commissioners of Sewers, the medical officer (Dr. W. Sedgwick Saunders) laid upon the table a pamphlet on the action of water upon lead pipes, being a translation which he had made from the French of M. Belgrand, in which, after giving particulars of a series of experiments undertaken in conjunction with M. Felix le Blanc, a distinguished chemist and gas examiner, M. Belgrand says:—"Upon the whole, there is absolutely no danger of poisoning from the use of water flowing through leaden pipes. . . . . I do not think that any other mode of distributing water can be recommended, even to nervous people." It is not stated that Dr. Saunders commented on this assertion; surely, however, there is evidence extant in England of the evil results that have been caused by drinking water of a certain composition which had passed through leaden pipes?

PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

4,941. W. Cunningham, Dundee. Ventilating apparatus. Nov. 11, 1881.

4,943. G. Tall, Brixton. Compound for preventing the escape of steam, gas, water, &c., from joints of pipes. Nov. 11, 1881.

4,949. W. F. Padwick, Redhill. Insuring a supply of water in cisterns, pipes, &c., during frost. Nov. 11, 1881.

4,953. H. W. Gates, Brighton. Ventilator for chimneys. Nov. 12, 1881.

4,963. J. L. Hancock, Dalston. Ovens, kitcheners, and gas cooking-stoves. Nov. 12, 1881.

5,003. H. Barron & H. Raimes, Kilburn. Water-closets. Nov. 15, 1881.

5,018. W. T. Sugg, Westminster. Gas cooking apparatus. Nov. 16, 1881.

5,023. T. G. Messenger, Loughborough. Charging water-closet syphons, &c. Nov. 16, 1881.

5,027. E. R. Hollands, Newington. Open stove or fire-grates. Nov. 16, 1881.

5,030. W. B. Shorland, Manchester. Knobs or handles for locks, latches, &c. Nov. 17, 1881.

5,033. B. O'Neill, London. Manufacture of artificial marble, &c. Nov. 17, 1881.

5,039. T. Beddoe, Bermondsey. Disinfecting water-closets, urinals, &c. Nov. 17, 1881.

5,040. J. B. Petter, Yeovil. Stoves and fireplaces. Nov. 17, 1881.

NOTICES TO PROCEED

have been given by the following applicants, on the dates named.

Nov. 15, 1881.

3,079. J. Cornforth and E. T. Burton, Birmingham. Open fire-grates. July 14, 1881.

4,188. G. Hatton, Southport. Spanish sunblinds. Sept. 29, 1881.

* Compiled by Hart & Co., patent agents, 28, New Bridge-street, E.C.

Nov. 18, 1881.

3,515. J. W. Gibbs, Liverpool. Downcast ventilating cowls. Aug. 13, 1881.

3,778. W. Leggott, Bradford. Apparatus for actuating window-sashes. Aug. 30, 1881.

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending November 19, 1881.

1,530. J. C. J. Smith, Northfleet. Manufacturer of cement.

This is an improvement on Patent No. 1,583 of 1872, in completing the thorough drying of the slip by the time that the dry-slip in the kiln has been converted into clinker. In the drying-chamber are baffle-plates, so arranged that the heated gases from the charged kiln traverse the drying-chamber in close contact with the surface of the slip. April 7, 1881. Price 6d.

1,555. J. G. Tongue, London. Treating and preparing bituminous substances.

The bituminous substance is heated, and finely-crushed carbon or ground coke is thrown into the mass and well stirred. It is then still further heated for a period of ten hours. The preparation can then be either cast in moulds or used for surfacing roadways, &c., in a liquid state. (Com. by H. Randhahn, Waldau, Prussia.) April 9, 1881. Price 6d.

1,566. H. J. Allison, London. Clips for securing slates or tiles on roofs.

This clip is formed of metal, and consists of two parallel branches of unequal length, which clasp the purlin. At the top of the longer branch a space is arranged for the slates or tiles. (Com. by J. J. B. Celier, Nevers, France.) (*Pro. Pro.*) April 11, 1881. Price 2d.

1,576. W. E. Gedge, London. Indicating apparatus or slide-bolt for doors of water-closets, &c.

A plate is connected with the inside bolt, which shows through an aperture in the door and indicates when any one is in. (Com. by J. François, Lyons.) April 11, 1881. Price 6d.

1,616. F. A. Lawrance, Stevenage. Sash-bars.

These bars are formed of two pieces of metal. The cross-section of the lower part is the shape of a double fluked anchor, the shank of which is enlarged to form a ring. The upper part fits over this ring, and the two edges rest on and hold in position the glass that rests on the flukes below. April 13, 1881. Price 4d.

1,618. G. E. Wilson, Leeds. Latches and locks.

To enable the latch to be disengaged by pulling the knob instead of turning it, a projecting piece is fitted on the knob-spindle, which engages a cam on the bolt. A spring is used to force the bolt back again when this projecting piece allows it to move. April 13, 1881. Price 6d.

1,641. J. H. Blum, Bienne, Switzerland Liquid meter.

This consists of a hollow cock, which has two compartments, the capacities of which are known. They are alternately filled and emptied. Various modifications are shown with and without counting mechanism. April 14, 1881. Price 8d.

1,646. H. P. Holt, Leeds. Sanitary appliances for buildings.

Each building has only one connexion with the drain, in which connexion are two traps. The first trap forms a grease-box which has holes, and is made to lift out for cleaning purposes; the second trap is an inverted box, with its open edges dipping into the cavity over which it is fixed. The closets are flushed by syphons, which are brought into action either by a piston moving in a cylinder to withdraw the air, or by a smaller syphon worked by the door or the seat. April 14, 1881. Price 6d.

THE POLLUTION OF THE SOIL BY INTERMENTS.

SIR,—I have read with much satisfaction the article in a recent number of your journal, entitled "The Soil and its Influence on Human Health," being the substance of a lecture delivered by Dr. Pettenkofer, of Salzburg, before the German Society of Natural Philosophers and Physicians. "As the influence of the soil," according to the lecturer, "showed itself most clearly in the case of epidemic diseases," it can scarcely be controverted that much of the infection which occurs in London is, in a great measure, attributable to the presence of over-crowded cemeteries. As the body must be decomposed and its elements distributed among Nature's great reservoirs of material,—earth, air, and water,—it is of paramount importance that the repositories of the departed should be situated at safe distances from dense populations.

The *Times* not long since treated of the serious peril to health, and even life, arising from the deleterious atmosphere of large towns. That epidemics, in themselves preventible, swell the bills of mortality, is a fact testified to by eminent authorities. "In the ignorance of the sufferers," remarks the leading journal, "consists their helplessness. They sicken, and, indeed, they die, but they cannot prove it, and cannot even describe the causation. When people know

more of the air they are breathing, they will be able to protect themselves." A report of the French Academy of Medicine attributes the diphtheritic disease that at one time raged in the vicinity of Père-la-Chaise, Montmartre, and Montparnasse to the putrid emanations from these seething burial-places. The re-appearance of the plague at Modara, in 1828, is alleged to have arisen from an excavation made in some ground, where the victims of the plague had been interred three centuries previously. The virulence of the cholera in London during 1854 was augmented owing to excavations having been made for sewers in the sites where the victims of the great plague were buried. And Mr. Simon has warned the authorities of what is likely to happen again if sanitary preventives be not adopted.

Were there no suitable provision at hand to meet the mortuary wants of a large and growing community like that of London, it would be sad indeed. Fortunately, however, there exists the spacious London Necropolis at Woking, with its excellent soil, and its salubrious site, so convenient to the metropolis. This cemetery, as Mr. Seymour Haden pointed out in his published letters, is amply sufficient to meet the prospective annual mortality of London for a long time to come, and this without disturbing a single body for at least ten years, or crowding a number of corpses into one grave, as is the custom in other places. The "pit-system" of burial is highly objectionable, especially on sanitary grounds, inasmuch as it tends to poison the soil and infect air and water. Hygiene.

TESTING TRAPS.

Sir,—As one of the committee present at the experiments carried out at Messrs. Pullen's, on Saturday, the 19th ult., will you kindly allow me to call the attention of your readers to one of the conditions under which those experiments were carried out, viz.,—the unusual depth of drop between the valve and water-line, 13¾ in.? Having during the past three years carried out many hundreds of experiments with closet-traps, I am in a position to say that a more unfair test could not be applied, for while it is rather an advantage to the "Helmet," it is a very great disadvantage to the round ℧ and the "Eclipse."

Feeling, from my knowledge of this matter, that the true merits of the various traps are not yet fairly before the public, I now challenge Mr. Davies, and, provided that the Messrs. Pullen will grant the use of their scaffolding and apparatus for the purpose, I will undertake to prove before a committee,—

1. That the Helmet-trap is not to be relied upon unless protected by soil-pipe ventilation.
2. That a ℧ or half Ω trap can, when properly ventilated, be made perfectly safe, when fixed beneath a valve-closet.
3. That a ventilated Ω-trap can be fixed beneath a valve-closet with any length of drop, and will hold its seal against the most severe attacks to which it can be subjected.
4. That a ventilated Ω-trap, fixed with its outer leg upon the top of 45 ft. of soil-pipe, is perfectly safe, either under a valve or a direct-action closet.

Daniel Emptage, S.E.

*** Since the above was in type we have received several other letters protesting against the mode in which these experiments were conducted and the deductions made, especially from Mr. John Smeaton and Mr. Hellyer. It is unnecessary to print them. Mr. Buchan has also written.

POSITION OF THE SPHINXES.

Sir,—The reference in your recent issue to the Obelisk has, I hope, set many thinking why there should be any hesitation on the part of the Metropolitan Board of Works as to the position of the sphinxes at the base of Cleopatra's Needle, and what authority can be given for the sphinxes being placed facing the Obelisk, as if meditating how their tall companion had found his way hither.

The idea of the Trafalgar-square lions being placed to face Nelson's Column would of itself be meaningless, to say nothing of the want of dignity as a result. It would, of course, have proved a miserable failure. No better precedent can be given than the Landseer lions, and the symmetry and *entourage* of Cleopatra's Needle require that it should be followed.

The custom, moreover, by the ancients, of placing their sphinxes as guards to their palaces and temples, surely dictates that the position should be towards the approach, to boldly face the foe, and not to appear to crouch and skulk away with their tails between their legs. Such a notion is unworthy an Egyptian sphinx,—a combination of the noblest qualities,—intelligence and power, the man and the lion.

Let us consider for one moment the effect in that marvellous avenue of sphinxes between Luxor and Carnac (a distance over 6,500 ft. in length), if all their tails, instead of their heads, were turned towards their royal master and conqueror, as the trophies of victory were being conveyed with stately march to yon sacred temple. Would the sphinxes, under such circumstances, have added much to the glory of the scene? H. H. Bridgman.

CEMENT FOR KILNS.

Sir,—May I be allowed to ask, through the medium of your columns, if Portland cement would be a suitable material to use as mortar for building a brick-kiln, and if so, what would be the best sand to mix with it, and in what proportion?

From some small experiments I have made in repairing kilns, I am inclined to think favourably of it, and, before using it on a larger scale, desire to know what has been the experience of others. Richard R. Norris.

DISTRICT SURVEYORS.

Sir,—I am glad to find public attention is called to district surveyors and their duties.

There can be no doubt that the 37th section of the Act is not interpreted in its true spirit by some at least of the gentlemen who hold the office, and it is a direct source of grievance to many professional men that a public officer of the Metropolitan Board of Works should also act in connexion with cases in his district on behalf of the leaseholder and occasionally the freeholder. It is in the smaller transactions, such as dilapidations, repairs, letting of land after some dangerous (?) buildings have been removed by his order, &c., that the temptation occurs to blink at the 37th section. A. C.

STAINED GLASS.

London.—A window has just been erected at St. George's Church, Tufnell Park, to the memory of the late Rev. W. McCall, the first vicar. It is by Messrs. Burlinson & Grylls, and is a very good window; colour subdued and the drawing good.

East Bergholt.—A large stained-glass window has been fixed by Messrs. Lavers, Barraud, & Westlake in the north wall of the church, alongside another window dedicated to the Hughes family, and erected by the same lady,—Miss Gratiana Maria Hughes. The window is in remembrance of the Rev. Sir Richard Hughes, bart., and of his wife. The subjects consist of the "Martyrdom of St. Stephen," the "Conversion of St. Paul," "Paul and Silas singing Hymns in Prison," "The Angel appearing to St. Paul on board ship when he was wrecked," "Abraham and Sarah," the "Virgin Mary and Joseph," "Baptism," "Our Lord taking little Children up in His Arms and blessing them," "The Marriage in Cana of Galilee," "The Lord's Supper," and "Christ ordaining the Twelve Apostles." At the top of the window our Lord is represented delivering His "Apostolical Commission" to His disciples before His ascension,—"Feed my Sheep."

King's Heath, near Birmingham.—A three-light Munich stained-glass window, by Messrs. Mayer & Co., representing the "Ascension," "Christ in the Temple," and "Our Lord Blessing Children," has just been presented to King's Heath Church, near Birmingham, by Mr. F. Everitt, in memory of his son, a likeness of whom is introduced in the latter light.

VARIORUM.

The seventh volume of "The Proceedings of the Association of Municipal and Sanitary Engineers and Surveyors" (E. & F. N. Spon) is a useful little book for those concerned in the matters of which it treats. It includes the opinions of practical men on practical subjects, and should assist in bringing about the prevalence of correct views. It is edited by Mr. Thos. Cole.——Foremost amongst a little heap on our table of shilling books for Christmas comes "The Belgravia Annual" (Chatto & Windus). It commences with an interesting story by Mr. Wilkie Collins, "Your Money or Your Life," and there are many others to match, with the usual run of illustrations. It is a good shillingsworth for the lovers of mystery.—— The illustrations of "Yule Tide, Christmas number for 1881," which are numerous and good, include, moreover, one of the best chromo-lithographic reproductions that have yet been given with a serial of the kind, "Young Mother Hubbard," after G. D. Leslie, R.A. The letter-press, too, seems quite up to the average. It is published by Letts, Son, & Co.——"Thirteen at Dinner, and What Came of It," Arrowsmith's Christmas Annual, 1881, claims to be the first thing of the kind that has been produced in the provinces, and we can honestly say it is very well done, both from a literary and pictorial point of view. Arrowsmith's address is Bristol. ——For quantity of matter and number of illustrations the Christmas number of "Harper's Magazine" (Sampson Low) stands first of its kind, and some of both is very good. We are bound to confess, nevertheless, that we have found some of the letter-press dull.

The Big Bell for St. Paul's.—We are told that the casting of the new bell for St. Paul's Cathedral has just been completed at the works of Messrs. J. M. Taylor & Sons, Loughborough. When it is dug out, within the next day or two, it will weigh no less than 17½ tons. It will be the largest bell in the kingdom, if not in Europe. The process of conveying the new bell to London will be one of great difficulty, says our informant. Common-sense asks why the bell was cast so far away?

Miscellanea.

St. Martin's School of Art, Long-acre. At the distribution of prizes last week, Mr. Val Prinsep, A.R.A., who presided, addressed the students, and in the course of his observations he advised them to visit the different picture-galleries in London, and, when there, to ask themselves what the artist meant to express when he painted the picture. And the same thing applied to sculpture. Beauty was, no doubt, everywhere, and it was one of the great functions of art; but as art was not born in man, but was a matter of education, so also was the idea of beauty. It seemed likely, he said, that art would rise again with redoubled success. True art was a mixture of art and nature. Art by itself would not do, neither would nature by itself; the two combined were necessary. He warned them against being led away by enthusiasm and over-estimating the value of a work of art executed by themselves. They were apt to admire things that struck them as original, but which were only eccentric. "Eccentricity was not genius" was a precept he would impress upon them; nay, he would have it written in letters of gold on the walls of every art-school in England, where the students seemed more influenced by peculiarity than the Frenchman or the German. Lately we had heard much of the "æsthetic." Æstheticism was in possession of the stage and in the mouths of all. Æsthetics might be seen in our streets, clad in sad greens and sickly yellows, with long or unkempt hair and shaky legs. The word came from the Greek, and originally meant "sentiment, or the pleasures derived from the senses." The greatest geniuses had been the simplest men, and it was these great men who might be called æsthetes, professors of the science of the beautiful, expounders of the beauties of nature. Let them, then, be true followers of æstheticism. When such a knowledge of art, such a profusion of the beautiful, got thus spread, art would prosper and find very much more scope on which to exercise its civilising power.

Warning to Tenants of Old Houses.—At the Cambridge County Court, the case of St. Peter's College *v.* Irwin and Mills was tried before Mr. Bagshawe, Q.C., and a jury. It was an action brought by the Master and Fellows of St. Peter's College to recover of the defendants the sum of 50*l.* or the return of an ancient piece of carving. The defendant Irwin was the occupier of a public-house at Cambridge belonging to the College, and in the tap-room over the fire-place was an ancient piece of carved woodwork, supposed to be upwards of 300 years old, and which it was believed at one time formed part of the old College library. The defendant Irwin was a sub-tenant of the lessee, and it was proved that he and Mills about the 15th of August last removed the carving and substituted in its place ordinary woodwork. The defendant Mills took it away and endeavoured to sell it, and, according to his evidence, on his failing to find a customer, it was chopped up and burnt. It was undoubtedly part of the freehold. The Judge directed the jury that the article, not being produced, on the authority of the leading case of "Armory *v.* Delamire" they must presume it to be of great value, and, after a short deliberation, they assessed its value at 40*l.*, that sum to be reduced to 40*s.* on the return of the carving, which, it was alleged, had not been destroyed.

Disinfecting Dens.—Dr. Domett-Stone, speaking of recent deaths from sewer-gas, says, many lives might be saved and fevers averted if our parish authorities would instruct their sanitary inspectors to see that disinfectants are copiously and frequently used. Probably the most effective, and assuredly the cheapest, costing less than one farthing a gallon, would be found to be a solution of chloride of lead, so strongly recommended by the late Dr. Goolden, of St. Thomas's Hospital, as the most simple, the most powerful and economical agent for eliminating sulphide of hydrogen from the atmosphere, as well as from all organic matter in a state of decomposition or putridity. It is prepared thus:—Half a drachm of nitrate of lead dissolved in a pint or so of boiling water, to be mixed in a pail of water, in which 2 drachms of common salt have been dissolved. A cloth, dipped into the solution, and hung up in any place where bad odours prevail, will sweeten the fœtid atmosphere instantaneously, or thrown down a sink, water-closet, or drain, or over a heap of refuse, will produce a like result.

St. Mary's R.C. Cathedral, Newcastle.—The re-opening of St. Mary's Catholic Cathedral, Clayton-street, Newcastle, after being restored and decorated was celebrated by special services. The work of restoration, which has extended over a period of three months, consisted of new flooring, newly varnished seats, and renovation of the stone work, executed by Mr. John Foggin, contractor, Newcastle, and painting and decorations by the firm of Lavers, Barraud, & Westlake, of Endell-street, London. The decorations are in the style of the fifteenth-century. The nave-roof has been painted red and buff, with decoration on the main timbers. A border in light red, on buff, runs over the arches, terminating at the top of each column with a crowned M under a small canopy. The timbers are of light red, with buff ornament, the chambers of buff and black, and the front member of rafters bear a number of *fleurs-de-lis* in gold. The panels are diapered with quatrefoils in grey, the centre of which contains a gold star and *fleur-de-lis* alternately. The walls of the chancel have borders in green over the arches, and they have been diapered with a rose and lily, each having the inscription beneath, "Ave Maria." The figures of the Blessed Virgin and St. Gabriel under canopies representing the Annunciation, have been painted by Mr. N. H. J. Westlake. There are also four figures of angels under canopies, holding scrolls. The whole of the work has been executed under the supervision of Messrs. Hansom & Dunn, architects, of London and Newcastle.

Bust of Mr. Ruskin.—A meeting was held on November 26th, in the Ruskin Drawing School, Oxford, for the purpose of presenting a marble bust of Mr. Ruskin by Mr. Boehm to the University galleries. Many of Turner's drawings and other munificent presents of Mr. Ruskin to the University were displayed in the Art School, the foundation and endowment of which are the work of the same benefactor. Dr. Acland, on behalf of the subscribers, proposed, "That the bust should be given to the Ruskin School of Art, as a lasting memorial of affection, respect, and admiration." Mr. Ruskin, he said, had founded a school in Oxford, furnished with over 800 examples of the most varied and often costly description. Henceforward the pure love of nature, the technical interpretation of it, and their relation to mind and to religion, would be taught to all coming generations through the wide foundations he had laid. This was seconded and carried. Thanks were also voted to Mr. Boehm.——Mr. Ruskin, it is said, has changed his plans with respect to the museum he has founded at Sheffield, and it is his intention to devote the remainder of his life to making it about the most complete institution of the kind in the world. He has decided to send there his unique library from Brantwood, and a portion of the books and plates have already arrived.

The Coming Health Congress at Brighton.—Rapid progress is being made in the Pavillion grounds in the construction of the iron annexe for the forthcoming Health Congress, which commences on December 13th. This annexe will consist of a main building, 200 ft. long and 40 ft. wide, running along the northern side of the lawn, at right angles to the main road through the grounds; and there will be a building in continuation of the same, 60 ft. in length by 20 ft. in width, connecting it, at right angles (parallel to the west side of the Grounds), with another building, 230 ft. long and 32 ft. wide, which will be entered from the Corn Exchange. On the south side of what is described as the "main building" (immediately south of the Dome) will be another building, joining it about the centre and ovrving (for 230 ft. in length with a width of 20 ft.) towards the grand entrance to the Pavilion itself. These buildings will all be of corrugated iron.

Royal Hibernian Academy of Arts.—At the annual meeting, held the other day, the following gentlemen were elected as officers for the year 1881-82:—President, Sir Thomas A. Jones; Professor of Painting, Mr. Augustus Burke; Professor of Sculpture, Mr. J. R. Kirk; Professor of Architecture, Mr. J. J. McCarthy; Professor of Antiquities, Mr. J. T. Gilbert, F.S.A.

The Grays Thurrock Gas Company have recently extended their works by building a 52 ft. brick and concrete tank, engine and boiler-house, oxide and purifier sheds, coal-stores, offices, photometer-house, boundary-walls, &c. The engineer was Mr. A. Williams, of Bankside, and the contractor Mr. W. J. Botterill, Cannon-street.

Sir Henry Thompson on Art.—On Wednesday in last week, Miss Thompson, daughter of Sir Henry Thompson, presented the prizes gained by the students of the City School of Art, at the School-hall in Bishopsgate-street. Sir Henry Thompson afterwards addressed the students. He spoke of the cultivation of art in connexion with ordinary work. There was, perhaps, he said, no source of wealth in this country which was so large, and at present so little tapped, as that which existed in the association of mental culture with ordinary work. The amount of increase in the value of an article was illimitable when once it had come thoroughly in contact with human brain. Art improved the position of the workman who studied it in connexion with his work. Thus, the carpenter could become a carver, the mason a sculptor. He believed that the market for artistic industrial products in this and other countries would exceed the supply, great as that was becoming; but he was not sure that there would be so great a demand for simple pictures, and he was almost appalled at the number of artists and art students at the present day. He advised those who intended to adopt the profession of painting to go to nature for their inspiration, and to copy no painter, however excellent his work might be. If they merely copied, they would never come to anything. Michelangelo and Raffaelle did much mischief unwittingly through being great, for men said, "Let us draw like Michelangelo and paint like Raffaelle," and the consequence was the deterioration of painting, by imitation, for a full century. The sources of inspiration which those great masters had gone to were neglected. He gave London high praise as offering subjects to the painter. The Thames was a mine of wealth from end to end. While looking from the Adelphi towards Westminster at sunset there was often to be seen a view equal to Venice.

An Eight Thousand Pound Blunder.—It seems that the ridiculous jealousy which prevails between the departments of some of the officers of the Corporation and the department of the Engineer to the Commission of Sewers has at length led to a very serious blunder, by which the ratepayers are to suffer to the extent of some 8,000*l*. At the last meeting of the Commissioners of Sewers, Mr. Boor moved a resolution to revoke an agreement come to at the last Court as to an arrangement to be made for acquiring the freehold interest in the ground required to widen the public way of Leadenhall-street and Gracechurch-street, and to pay to the leaseholders in respect of their interests therein an amount of 8,000*l*. The land, which was the property of the Corporation, was let to a syndicate, including, said Mr. Boor, "amongst others, a member of the Court." The City Architect was asked, but denied that any improvement was contemplated at that spot; and in due course the syndicate signed an agreement for the re-erection of the premises on the ground. This is pretty much the history of the transaction; and it comes, as Mr. Boor says, to this, that "the Corporation, through the gross laxity of one, if not of two, of their officers, had actually created interests for leaseholders before one brick was laid, for which the ratepayers were now asked to pay 8,000*l*."—*City Press*.

St. Pancras Industrial Exhibition.—The Lord Mayor on Saturday last distributed the medals and certificates awarded in connexion with this exhibition. Mr. E. M. Close (a member of the adjudication committee) stated that 58 certificates, 39 bronze medals, 13 silver medals, and 20 special certificates had been awarded. The exhibitors who received silver medals were as follow:—Robert Dawkins, machine used in shoe-making; Ernest Alfred Sullivan, audible railway signal; W. Aumonier, carved wood panels; W. F. Jenkins, wood carving; Thos. Cusdin, ornamental brickwork; G. W. Pinfold, objects of natural history. Amateurs.—W. Donn, inlaid work; W. Hooper, oil-painting; J. S. Teape, oil-painting; H. Recknell, water-colour painting; E. Benning, pen-and-ink drawing; H. Shirley, pencil and crayon drawing; C. Erlam, patchwork quilt. At the conclusion of the distribution, the Rev. G. M. Murphy moved a vote of thanks to the adjudicators, which was seconded by Mr. C. J. Tarring, and acknowledged by Mr. White, F.S.A.

Competition: Wimbledon.—In a limited competition for Congregational church and schools, Wimbledon, the design submitted by Mr. W. D. Church, architect, of South-place, Finsbury, was chosen by the committee.

Parkes Museum: International Medical and Sanitary Exhibition.—The certificates of awards, lithographed from the original design by Mr. Cave Thomas, are now being distributed. The number of exhibitors from different parts of the United Kingdom was 414, exhibitors from abroad, 88; making a total of 502 exhibitors, o whom 258 obtained either awards of the first class or awards of merit.

Surveyors' Institution.—The next meeting will be held on Monday, December 5th, when a paper will be read by Mr. E. P. Squarey, entitled, "Land Legislation and Tenants' Improvements," and a paper by Mr. P. D. Tuckett, entitled, "The Cause of the Failure of the Agricultural Holdings Act of 1875 and the present Agitation for Protection for Tenants' Capital."

The Late Mr. Macdonald, M.P., has bequeathed to the University of Glasgow the whole of his books on the subject of mining, and also 1,000*l*. for the foundation of bursaries to be held by young men who have actually worked underground as miners.

Re-Assessment, Barnet Union.—Mr. Charles F. Jones, of Temple-chambers, Fleet-street, has been chosen by the Guardians to re-assess the rateable value of all property within this Union, comprising 24,500 acres of land, and 6,274 houses. There were forty-two candidates.

The Smithfield Club Cattle Show opens on Monday next. Report says that there has been brought together an exceptionally good collection of implements and machinery. Some of the exhibits which are of special interest to our readers we may notice in our next.

Sanitary Institute of Great Britain.—The Autumnal Congress and Exhibition is arranged to be held at Newcastle-on-Tyne, in 1882.

TENDERS

For restoration and enlargement of All Saints' Church, Crowborough, Sussex. Messrs. Whitfield & Thomas, architects. Quantities by Messrs. Evans & Deacon:—

Card & Son	£3,492 0 0
Rowles	3,296 0 0
Vaughan	3,179 0 0
Paramor & Son	3,130 0 0
Cheeseman	3,128 0 0
Hughes	2,990 0 0
Bingham	2,797 0 0
Morris	2,750 0 0
John Paine	2,650 0 0

For additions to shop, Market-place, Great Yarmouth, for Mr. G. B. Palmer. Mr. J. W. Cockrill, architect:—

Isaacs, Great Yarmouth	£1,153 0 0
Beech & Cork, Great Yarmouth	1,028 0 0
Norfor, Southtown	919 0 0
Cooper, Great Yarmouth	900 0 0
Davy, Great Yarmouth	890 0 0
Springall, Great Yarmouth	870 0 0
F. Howes, Great Yarmouth	866 0 0
Want, Great Yarmouth	849 0 0
J. T. W. Bray, Great Yarmouth*	780 0 0

* Accepted.

For additions to a workshop at No. 144, Packington-street, for Mr. J. Wright. Mr. F. Hill, architect:—

Hughes	£320 0 0
Grover	297 0 0
Fernley	280 0 0
Dearing & Son (accepted)	260 0 0

For repairs, &c., to houses, Lewin-road, Streatham, and 59, Russell-square. Mr. W. Paice, architect:—
Walter H. Smith (accepted).

For the erection of a residence at the Ridgeways, Enfield, for Mr. W. J. Eales. Mr. W. D. Church, architect:—
Fairhead (accepted) £1,680 0 0

For the erection of a pair of semi-detached residences at the Ridgeways, Enfield, for the Rev. H. S. Toms and Mr. J. Garner, Mr. W. D. Church, architect:—
Fairhead (accepted) £2,560 0 0

For repairs, &c., to eight houses, Durham-street Vauxhall, for Mr. W. H. Withall:—

Lapthorne & Co.	£213 0 0
Drew & Co.	211 15 0
Williams	200 0 0

For alterations to the premises of Mr. H. H. Emanuel, Stag House, Southampton. Mr. Arthur Martin, architect:—

Watts (accepted)	£178 10 0
Marble and Iron Work.	
Garret, Hayton, & Shalders (accepted)	115 0 0

For the construction of pipe-sewers, with lampholes, manholes, flushing-chambers, &c., for the Improvement Commissioners of Milton, next Sittingbourne:—
Wilkes & Co., Bishopsgate, accepted.

For pulling down and rebuilding No. 305, Cable-street, St. George's-in-the-East, for Mr. Kendrick. R. Petert, architect:—
Parrish, Burdett-road accepted.

For the erection of school-buildings at Alton-street, Bromley, Tower Hamlets Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities supplied by Mr. T. Thornton Green :—

McGregor	£16,477	8	8
W. Brass	13,840	0	0
Higgs & Hill	13,699	0	0
Wood	13,566	0	0
Roberts	13,485	0	0
Lawrence	13,367	0	0
Boyce	13,000	0	0
Cox	12,862	0	0
Kirk & Randall	12,787	0	0
Hobson	12,611	0	0
Grover	12,589	0	0
Chappell	12,580	0	0
Atherton & Latta	12,465	0	0

For the erection of shops and offices at Great James-street, Bedford-row, W.C. Mr. F. C. Notley, architect. Quantities by Mr. W. Barrett :—

A. J. Boulton	£3,792	0	0
Haywaith	3,718	0	0
Patman & Fotheringham	3,623	0	0
Macey & Sons	3,533	0	0
J. & J. Greenwood	3,490	0	0
Langmead & Way	3,475	0	0
E. Lawrence	3,380	0	0
B. Nightingale	3,237	0	0
Axford	3,175	0	0
Allan & Sons	3,150	0	0
S. J. Scott	3,143	0	0

For the construction of road and drainage works on the United Land Company's Ealing Green Estate :—

Wilkes & Co.	£1,993	0	0
J. Jackson	1,775	0	0
Nowell & Robson	1,747	0	0
Wilson & Stodhard	1,719	0	0
Cooke & Co.	1,700	0	0
Beadle Bros.	1,618	0	0
J. Bloomfield	1,617	0	0
E. Wilson	1,599	0	0
Tomes & Wimpey	1,592	0	0
J. Carders	1,589	0	0
G. Acock	1,571	0	0
Ford & Everett	1,400	0	0
J. Pizzey	1,387	0	0
G. Felton	1,377	0	0
Dyer & Huntley (accepted)	1,292	10	9

For the erection of private dwelling-house, Thurlow Park-road, Dulwich, for Mr. Edmund Hornsby. Messrs. Wm. Hudson, Son, & Booth, architects :—

Cooper	£3,900	0	0
Bowyer	2,820	0	0
Morter	2,697	0	0
Brass	2,649	0	0
Duncaston	2,591	0	0
Wilson & Exton	2,558	0	0
Higgs	2,348	0	0

For rebuilding No. 8, Bacon-street, Bethnal Green, for Mr. W. Witherden. Mr. W. D. Church, architect. Quantities supplied by Messrs. Nixon & Raven :—

Wire	£1,484	10	0
J. Taylor	1,395	0	0
Tyerman	1,392	0	0
Godden	1,353	0	0
Steel	1,280	0	0
Shurmur	1,278	0	0
Sabey & Son	1,200	0	0

For pulling down and rebuilding 57, Bird-street, Lambeth, for Mr. W. Hart. Mr. Banister Fletcher, architect :—

Buckham	£278	0	0
Cook	259	0	0
Eldridge & Gee (accepted)	220	0	0

For the erection of a dwelling-house at Woodford Wells, Essex, for Mr. D. Schwinge. Mr. H. W. Sexton, architect :—

Harper	£1,873	0	0
Bangs	1,569	0	0
Wells	1,559	0	0
Knight	1,545	0	0
J. & H. Cocks	1,497	0	0

For repairs, &c., to Nos. 16 and 17, Winchester-street, Pentonville-road, for Mrs. Tebbutts. Mr. W. D. Church, architect :—

Saunders	£354	0	0
Sabey & Son	280	0	0
Steel Bros.	255	0	0
Godden (accepted)	250	0	0

For public works, Steventon Inclosure. Quantities by Mr. W. Gentry Bingham :—

R. Palmer	£14,446	17	7!
F. Talbot	11,200	0	0
W. Stubbs	10,385	0	0
C. Chamberlain	10,368	8	1
J. Dover	9,950	0	0
B. Cook & Co.	9,825	0	0
J. M. Smith	9,500	0	0
W. Harris	9,419	0	0
W. J. Botterill	9,280	0	0
W. Buxton	9,143	0	0
J. T. Simpson	9,046	13	11
W. Hickery	8,985	0	0
G. Middleton	8,579	0	0
J. Durnford & Son	8,554	0	0
F. Ottaway	7,983	5	9
R. Eustace & Son	7,783	0	0
W. Monsley	7,469	0	0
W. Rigby	7,199	12	6
J. Currall & G. Lewis	7,044	0	0
Bottom Bros.	6,850	0	0
J. T. Welch	6,571	0	0!

For alterations and additions at Nos. 3 and 4, Stroud Green-road, Finsbury Park, for Mr. Earle. Mr. W. Smith, architect :—

Shurmur	£495	0	0
Dunford & Langham	484	0	0
Cole & Chart	425	0	0
Stevens Bros.	415	0	0
Harper	414	0	0
Steel Bros.	407	0	0
Mattock Bros.	393	0	0

For finishing five houses at Middle-lane, Hornsey, for Mr. Elder. Mr. J. Farrar, architect :—

King	£947	0	0
Farnborough	802	0	0
Harper	790	0	0

For the construction of a service reservoir and intake works at Ceilwart, for the Barmouth Local Board. Mr. Thomas Roberts, engineer :—

J. Williams, Ceilwart, Barmouth	£1,202	0	0
J. Williams, Fronolen, Barmouth	1,198	0	0
S. P. Owen, Portmadoc	1,069	0	0
G. Williams, Harlech	859	0	0
Frague & Co., Birmingham	845	0	0

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